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**Department of Defense
Fiscal Year (FY) 2022 Budget Estimates**

May 2021



Navy

Justification Book Volume 4 of 5

Research, Development, Test & Evaluation, Navy

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The estimated cost of this report for the Department of the Navy (DON) is \$16,890. The estimated total cost for supporting the DON budget justification material is approximately \$3,919,738 during the 2021 fiscal year. This includes \$84,638 in supplies and \$3,835,100 in labor.

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Navy • Budget Estimates FY 2022 • RDT&E Program

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Department of Defense Appropriations Act, 2022

Research, Development, Test and Evaluation, Navy

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, \$22,639,362 to remain available for obligation until September 30, 2023.

The FY 2022 Overseas Contingency Operations transferred to the base budget are as follows:

Direct War costs accounted for in the Base Budget: \$26,169: Direct War costs are those combat or direct combat support costs that will not continue to be expended once combat operations end at major contingency locations.

Enduring costs accounted for in the Base Budget: \$26,196: Enduring Requirements are enduring in theater and in CONUS costs that will likely remain after combat operations cease, and have previously been funded in OCO.

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Department of Defense
 FY 2022 President's Budget
 Exhibit R-1 FY 2022 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

Appropriation -----	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request
-----	-----	-----	-----
Research, Development, Test & Eval, Navy	20,585,470	20,138,391	22,639,362
Total Research, Development, Test & Evaluation	20,585,470	20,138,391	22,639,362

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

** Includes Division C, Title IX and Division J, Title IV of the Consolidated Appropriations Act, 2021 (P.L. 116-260).

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Department of Defense
FY 2022 President's Budget
Exhibit R-1 FY 2022 President's Budget
Total Obligational Authority
(Dollars in Thousands)

Summary Recap of Budget Activities -----	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request
Basic Research	633,868	650,180	601,869
Applied Research	1,130,156	1,179,053	975,915
Advanced Technology Development	811,459	835,756	777,788
Advanced Component Development & Prototypes	5,199,276	5,529,668	7,077,987
System Development & Demonstration	6,042,127	5,875,510	5,910,089
Management Support	1,647,523	981,078	998,686
Operational Systems Development	5,121,061	5,062,354	5,313,319
Software and Digital Technology Pilot Programs		24,792	983,709
Total Research, Development, Test & Evaluation	20,585,470	20,138,391	22,639,362
 Summary Recap of FYDP Programs -----			
Strategic Forces	199,637	250,606	323,076
General Purpose Forces	1,723,845	1,632,610	1,528,517
Intelligence and Communications	811,581	691,939	612,252
Research and Development	15,910,716	15,658,000	18,260,975
Central Supply and Maintenance	72,675	49,757	40,209
Administration and Associated Activities	2,100	1,536	1,747
Space	14,407	35,956	
Classified Programs	1,850,509	1,817,987	1,872,586
Total Research, Development, Test & Evaluation	20,585,470	20,138,391	22,639,362

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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Department of the Navy
FY 2022 President's Budget
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Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
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1	0601103N	University Research Initiatives	01	162,576	144,102	117,448	U
2	0601152N	In-House Laboratory Independent Research	01	18,337	19,030		U
3	0601153N	Defense Research Sciences	01	452,955	487,048	484,421	U
		Basic Research		633,868	650,180	601,869	
4	0602114N	Power Projection Applied Research	02	27,859	38,701	23,013	U
5	0602123N	Force Protection Applied Research	02	208,810	209,008	122,888	U
6	0602131M	Marine Corps Landing Force Technology	02	67,350	55,403	51,112	U
7	0602235N	Common Picture Applied Research	02	41,874	43,495	51,477	U
8	0602236N	Warfighter Sustainment Applied Research	02	93,481	116,051	70,547	U
9	0602271N	Electromagnetic Systems Applied Research	02	86,680	92,624	85,157	U
10	0602435N	Ocean Warfighting Environment Applied Research	02	80,475	79,881	70,086	U
11	0602651M	Joint Non-Lethal Weapons Applied Research	02	6,155	6,316	6,405	U
12	0602747N	Undersea Warfare Applied Research	02	95,251	96,039	57,484	U
13	0602750N	Future Naval Capabilities Applied Research	02	147,050	170,681	173,356	U
14	0602782N	Mine and Expeditionary Warfare Applied Research	02	52,330	33,081	32,160	U
15	0602792N	Innovative Naval Prototypes (INP) Applied Research	02	148,923	161,028	152,976	U
16	0602861N	Science and Technology Management - ONR Field Activities	02	73,918	76,745	79,254	U
		Applied Research		1,130,156	1,179,053	975,915	
17	0603123N	Force Protection Advanced Technology	03	43,630	24,305	21,661	U
18	0603271N	Electromagnetic Systems Advanced Technology	03	9,069	22,957	8,146	U

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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
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19	0603640M	USMC Advanced Technology Demonstration (ATD)	03	228,703	249,340	224,155	U
20	0603651M	Joint Non-Lethal Weapons Technology Development	03	12,907	13,243	13,429	U
21	0603673N	Future Naval Capabilities Advanced Technology Development	03	216,798	231,061	265,299	U
22	0603680N	Manufacturing Technology Program	03	63,432	59,861	57,236	U
23	0603729N	Warfighter Protection Advanced Technology	03	32,989	33,120	4,935	U
24	0603758N	Navy Warfighting Experiments and Demonstrations	03	65,608	40,591	47,167	U
25	0603782N	Mine and Expeditionary Warfare Advanced Technology	03	12,802	1,940	1,981	U
26	0603801N	Innovative Naval Prototypes (INP) Advanced Technology Development	03	125,521	159,338	133,779	U
		Advanced Technology Development		811,459	835,756	777,788	
27	0603128N	Unmanned Aerial System	04			16,879	U
28	0603178N	Medium and Large Unmanned Surface Vehicles (USVs)	04		91,747	144,846	U
29	0603207N	Air/Ocean Tactical Applications	04	41,862	35,245	27,849	U
30	0603216N	Aviation Survivability	04	11,742	13,342	16,815	U
31	0603239N	Naval Construction Forces	04		2,341	5,290	U
32	0603251N	Aircraft Systems	04	1,467	418		U
33	0603254N	ASW Systems Development	04	6,991	18,500	17,612	U
34	0603261N	Tactical Airborne Reconnaissance	04	3,419	3,411	3,111	U
35	0603382N	Advanced Combat Systems Technology	04	56,464	52,381	32,310	U
36	0603502N	Surface and Shallow Water Mine Countermeasures	04	387,991	47,575	58,013	U
37	0603506N	Surface Ship Torpedo Defense	04	7,175	11,759	1,862	U

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Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
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38	0603512N	Carrier Systems Development	04	4,906	7,526	7,182	U
39	0603525N	PILOT FISH	04	189,133	328,757	408,087	U
40	0603527N	RETRACT LARCH	04	32,798	49,062	44,197	U
41	0603536N	RETRACT JUNIPER	04	127,643	131,288	144,541	U
42	0603542N	Radiological Control	04	679	775	761	U
43	0603553N	Surface ASW	04	1,098	1,156	1,144	U
44	0603561N	Advanced Submarine System Development	04	111,281	151,547	99,782	U
45	0603562N	Submarine Tactical Warfare Systems	04	10,820	10,481	14,059	U
46	0603563N	Ship Concept Advanced Design	04	100,887	131,741	111,590	U
47	0603564N	Ship Preliminary Design & Feasibility Studies	04	21,630	46,657	106,957	U
48	0603570N	Advanced Nuclear Power Systems	04	181,652	149,188	203,572	U
49	0603573N	Advanced Surface Machinery Systems	04	84,227	40,510	78,122	U
50	0603576N	CHALK EAGLE	04	52,772	71,181	80,270	U
51	0603581N	Littoral Combat Ship (LCS)	04	16,354	42,035	84,924	U
52	0603582N	Combat System Integration	04	16,715	17,764	17,322	U
53	0603595N	Ohio Replacement	04	411,431	316,396	296,231	U
54	0603596N	LCS Mission Modules	04	105,412	77,573	75,995	U
55	0603597N	Automated Test and Re-Test (ATRTR)	04	41,412	34,766	7,805	U
56	0603599N	Frigate Development	04	56,890	81,942	109,459	U
57	0603609N	Conventional Munitions	04	8,917	9,877	7,296	U

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58	0603635M	Marine Corps Ground Combat/Support System	04	50,057	43,457	77,065	U
59	0603654N	Joint Service Explosive Ordnance Development	04	45,789	57,288	34,785	U
60	0603713N	Ocean Engineering Technology Development	04	5,499	6,318	8,774	U
61	0603721N	Environmental Protection	04	20,165	20,514	20,677	U
62	0603724N	Navy Energy Program	04	55,750	56,389	33,824	U
63	0603725N	Facilities Improvement	04	3,611	4,645	6,327	U
64	0603734N	CHALK CORAL	04	301,803	429,577	579,389	U
65	0603739N	Navy Logistic Productivity	04	3,710	3,880	669	U
66	0603746N	RETRACT MAPLE	04	242,633	297,685	295,295	U
67	0603748N	LINK PLUMERIA	04	358,204	482,418	692,280	U
68	0603751N	RETRACT ELM	04	59,804	86,730	83,904	U
69	0603764M	LINK EVERGREEN	04	28,961	201,984	221,253	U
70	0603764N	LINK EVERGREEN	04	161,313			U
71	0603790N	NATO Research and Development	04	7,697	6,880	5,805	U
72	0603795N	Land Attack Technology	04	7,044	7,254	4,017	U
73	0603851M	Joint Non-Lethal Weapons Testing	04	27,922	28,435	29,589	U
74	0603860N	Joint Precision Approach and Landing Systems - Dem/Val	04	47,417	33,612	24,450	U
75	0603925N	Directed Energy and Electric Weapon Systems	04	136,535	126,325	81,803	U
76	0604014N	F/A -18 Infrared Search and Track (IRST)	04	111,061	84,190	48,793	U
77	0604027N	Digital Warfare Office	04	35,551	35,480	46,769	U

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78	0604028N	Small and Medium Unmanned Undersea Vehicles	04	45,467	38,968	84,676	U
79	0604029N	Unmanned Undersea Vehicle Core Technologies	04	40,400	39,882	59,299	U
80	0604030N	Rapid Prototyping, Experimentation and Demonstration.	04	31,000	12,046		U
81	0604031N	Large Unmanned Undersea Vehicles	04	66,664	62,209	88,063	U
82	0604112N	Gerald R. Ford Class Nuclear Aircraft Carrier (CVN 78 - 80)	04	106,381	104,433	121,509	U
83	0604126N	Littoral Airborne MCM	04	19,672	17,889	18,669	U
84	0604127N	Surface Mine Countermeasures	04	18,083	18,670	13,655	U
85	0604272N	Tactical Air Directional Infrared Countermeasures (TADIRCM)	04	54,175	49,450	33,246	U
86	0604289M	Next Generation Logistics	04	18,260	5,000	1,071	U
87	0604292N	Future Vertical Lift (Maritime Strike)	04		5,097	9,825	U
88	0604320M	Rapid Technology Capability Prototype	04	4,860	5,664	6,555	U
89	0604454N	LX (R)	04	12,012	10,158	3,344	U
90	0604536N	Advanced Undersea Prototyping	04	180,106	89,296	58,473	U
91	0604636N	Counter Unmanned Aircraft Systems (C-UAS)	04	3,030	2,598	5,529	U
92	0604659N	Precision Strike Weapons Development Program***	04	621,250	79,417	96,763	U
93	0604707N	Space and Electronic Warfare (SEW) Architecture/Engineering Support	04	5,060	6,208	9,340	U
94	0604786N	Offensive Anti-Surface Warfare Weapon Development	04	112,555	46,750	127,756	U
95	0605512N	MEDIUM UNMANNED SURFACE VEHICLES (MUSVs))	04		55,285	60,028	U
96	0605513N	Unmanned Surface Vehicle Enabling Capabilities	04			170,838	U
97	0605514M	GROUND BASED ANTI-SHIP MISSILE (MARFORRES)	04		29,678	102,716	U

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(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

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98	0605516M	LONG RANGE FIRES (MARFORRES)	04		56,250	88,479	U
99	0605518N	CONVENTIONAL PROMPT STRIKE (CPS)***	04		766,637	1,373,521	U
100	0303354N	ASW Systems Development - MIP	04	9,991	9,151	8,571	U
101	0304240M	Advanced Tactical Unmanned Aircraft System	04	45,407	28,125	16,204	U
102	0304270N	Electronic Warfare Development - MIP	04	609	805	506	U
		Advanced Component Development & Prototypes		5,199,276	5,529,668	7,077,987	
103	0603208N	Training System Aircraft	05	15,371	4,307	5,864	U
104	0604212N	Other Helo Development	05	37,812	23,133	56,444	U
105	0604214M	AV-8B Aircraft - Eng Dev	05	27,057	16,749	10,146	U
106	0604215N	Standards Development	05	3,499	4,218	4,082	U
107	0604216N	Multi-Mission Helicopter Upgrade Development	05	18,710	36,889	46,418	U
108	0604221N	P-3 Modernization Program	05		598	579	U
109	0604230N	Warfare Support System	05	8,365	14,942	10,167	U
110	0604231N	Command and Control Systems	05	72,811	124,780	122,913	U
111	0604234N	Advanced Hawkeye	05	221,058	275,813	386,860	U
112	0604245M	H-1 Upgrades	05	59,611	57,094	50,158	U
113	0604261N	Acoustic Search Sensors	05	45,792	47,182	46,066	U
114	0604262N	V-22A	05	184,443	132,427	107,984	U
115	0604264N	Air Crew Systems Development	05	18,652	21,376	22,746	U
116	0604269N	EA-18	05	122,048	106,134	68,425	U

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117	0604270N	Electronic Warfare Development	05	107,097	127,718	139,535	U
118	0604273M	Executive Helo Development	05	170,364	96,693	45,932	U
119	0604274N	Next Generation Jammer (NGJ)	05	480,684	447,152	243,923	U
120	0604280N	Joint Tactical Radio System - Navy (JTRS-Navy)	05	180,878	232,930	234,434	U
121	0604282N	Next Generation Jammer (NGJ) Increment II	05	88,635	165,614	248,096	U
122	0604307N	Surface Combatant Combat System Engineering	05	361,311	357,530	371,575	U
123	0604311N	LPD-17 Class Systems Integration	05	615	941	904	U
124	0604329N	Small Diameter Bomb (SDB)	05	48,257	51,097	46,769	U
125	0604366N	Standard Missile Improvements	05	196,135	305,795	343,511	U
126	0604373N	Airborne MCM	05	10,488	10,861	10,881	U
127	0604378N	Naval Integrated Fire Control - Counter Air Systems Engineering	05	28,912	41,992	46,121	U
128	0604419N	Advanced Sensors Application Program (ASAP)	05		12,483		U
129	0604501N	Advanced Above Water Sensors	05	28,297	67,167	77,852	U
130	0604503N	SSN-688 and Trident Modernization	05	75,822	92,682	95,693	U
131	0604504N	Air Control	05	50,195	38,863	27,499	U
132	0604512N	Shipboard Aviation Systems	05	14,478	11,593	8,924	U
133	0604518N	Combat Information Center Conversion	05	15,478	12,661	11,631	U
134	0604522N	Air and Missile Defense Radar (AMDR) System	05	35,694	61,656	96,556	U
135	0604530N	Advanced Arresting Gear (AAG)	05	115,912	65,834	147	U
136	0604558N	New Design SSN	05	309,212	242,108	503,252	U

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** Includes Division C, Title IX and Division J, Title IV of the Consolidated Appropriations Act, 2021 (P.L. 116-260).

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Department of the Navy
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Exhibit R-1 FY 2022 President's Budget
Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
--	-----	----	---	-----	-----	-----	-
137	0604562N	Submarine Tactical Warfare System	05	60,842	71,093	62,115	U
138	0604567N	Ship Contract Design/ Live Fire T&E	05	44,972	63,531	54,829	U
139	0604574N	Navy Tactical Computer Resources	05	3,604	3,836	4,290	U
140	0604601N	Mine Development	05	54,431	84,793	76,027	U
141	0604610N	Lightweight Torpedo Development	05	102,112	115,102	94,386	U
142	0604654N	Joint Service Explosive Ordnance Development	05	7,942	8,346	8,348	U
143	0604657M	USMC Ground Combat/Supporting Arms Systems - Eng Dev	05	19,312	29,467	42,144	U
144	0604703N	Personnel, Training, Simulation, and Human Factors	05	4,538	7,164	7,375	U
145	0604727N	Joint Standoff Weapon Systems	05	15,745	30,351		U
146	0604755N	Ship Self Defense (Detect & Control)	05	170,474	153,532	149,433	U
147	0604756N	Ship Self Defense (Engage: Hard Kill)	05	118,609	94,420	87,862	U
148	0604757N	Ship Self Defense (Engage: Soft Kill/EW)	05	91,928	84,852	69,006	U
149	0604761N	Intelligence Engineering	05	44,611	12,088	20,684	U
150	0604771N	Medical Development	05	32,036	39,612	3,967	U
151	0604777N	Navigation/ID System	05	44,207	49,862	48,837	U
152	0604800M	Joint Strike Fighter (JSF) - EMD	05	1,708	561	577	U
153	0604800N	Joint Strike Fighter (JSF) - EMD	05	1,481	250	262	U
154	0604850N	SSN(X)	05		996	29,829	U
155	0605013M	Information Technology Development	05	1,448	974	11,277	U
156	0605013N	Information Technology Development	05	256,492	270,110	243,828	U

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
--	-----	----	---	-----	-----	-----	-
157	0605024N	Anti-Tamper Technology Support	05	4,882	7,702	8,426	U
158	0605180N	TACAMO Modernization	05			150,592	U
159	0605212M	CH-53K RDTE	05	489,699	406,406	256,903	U
160	0605215N	Mission Planning	05	70,881	83,980	88,128	U
161	0605217N	Common Avionics	05	34,430	53,782	60,117	U
162	0605220N	Ship to Shore Connector (SSC)	05	19,188	12,632	6,320	U
163	0605327N	T-AO 205 Class	05	1,616	2,064	4,336	U
164	0605414N	Unmanned Carrier Aviation (UCA)	05	628,169	256,970	268,937	U
165	0605450M	Joint Air-to-Ground Missile (JAGM)	05	13,427	12,713	356	U
166	0605500N	Multi-mission Maritime Aircraft (MMA)	05	20,645	24,084	27,279	U
167	0605504N	Multi-Mission Maritime (MMA) Increment III	05	137,310	185,328	173,784	U
168	0605611M	Marine Corps Assault Vehicles System Development & Demonstration	05	48,396	41,775	80,709	U
169	0605813M	Joint Light Tactical Vehicle (JLTV) System Development & Demonstration	05	2,094	2,541	2,005	U
170	0204202N	DDG-1000	05	105,122	222,519	112,576	U
171	0303267N	Auctioned Spectrum Relocation Fund	05	127,368			U
172	0303467N	SENSR Spectrum Pipeline SRF	05	855			U
173	0303567N	Non-SENSR Spectrum Pipeline SRF	05	1,652			U
174	0304785N	ISR & Info Operations	05	87,099	107,964	136,140	U

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
--	-----	----	---	-----	-----	-----	-
175	0306250M	Cyber Operations Technology Development	05	19,109	25,098	26,318	U
		System Development & Demonstration		6,042,127	5,875,510	5,910,089	
176	0604256N	Threat Simulator Development	06	60,968	22,043	20,862	U
177	0604258N	Target Systems Development	06	11,734	10,095	12,113	U
178	0604759N	Major T&E Investment	06	108,129	105,195	84,617	U
179	0605152N	Studies and Analysis Support - Navy	06	3,913	3,089	3,108	U
180	0605154N	Center for Naval Analyses	06	46,185	43,352	38,590	U
181	0605285N	Next Generation Fighter	06	7,006			U
182	0605502N	Small Business Innovative Research	06	526,969			U
183	0605804N	Technical Information Services	06	1,461	928	934	U
184	0605853N	Management, Technical & International Support	06	112,085	103,987	93,966	U
185	0605856N	Strategic Technical Support	06	3,617	3,813	3,538	U
186	0605863N	RDT&E Ship and Aircraft Support	06	92,596	103,630	135,149	U
187	0605864N	Test and Evaluation Support	06	522,497	418,873	429,277	U
188	0605865N	Operational Test and Evaluation Capability	06	24,654	26,092	24,872	U
189	0605866N	Navy Space and Electronic Warfare (SEW) Support	06	12,217	15,695	17,653	U
190	0605867N	SEW Surveillance/Reconnaissance Support	06	8,402	8,559	8,065	U
191	0605873M	Marine Corps Program Wide Support	06	33,809	37,749	47,042	U
192	0605898N	Management HQ - R&D	06	38,921	41,091	35,614	U
193	0606355N	Warfare Innovation Management	06	27,668	33,058	38,958	U

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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Line	Program Element No Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
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194	0305327N	Insider Threat	06	2,592	2,293	2,581	U
195	0902498N	Management Headquarters (Departmental Support Activities)	06	1,456	1,536	1,747	U
196	0909999N	Financing for Cancelled Account Adjustments	06	644			U
		Management Support		1,647,523	981,078	998,686	
198	0604227N	HARPOON Modifications	07	2,302	697		U
199	0604840M	F-35 C2D2	07	380,232	349,879	515,746	U
200	0604840N	F-35 C2D2	07	342,860	370,235	481,962	U
201	0605520M	MARINE CORPS AIR DEFENSE WEAPONS SYSTEMS (MARFORRES)	07		124,681	65,381	U
202	0607658N	Cooperative Engagement Capability (CEC)	07	122,817	133,962	176,486	U
203	0101221N	Strategic Sub & Weapons System Support	07	121,122	124,990	177,098	U
204	0101224N	SSBN Security Technology Program	07	42,104	45,970	45,775	U
205	0101226N	Submarine Acoustic Warfare Development	07	6,548	37,693	64,752	U
206	0101402N	Navy Strategic Communications	07	29,863	41,953	35,451	U
207	0204136N	F/A-18 Squadrons	07	182,014	185,084	189,224	U
208	0204228N	Surface Support	07	33,248	33,333	13,733	U
209	0204229N	Tomahawk and Tomahawk Mission Planning Center (TMPC)	07	256,668	199,673	132,181	U
210	0204311N	Integrated Surveillance System	07	103,371	112,574	84,276	U
211	0204313N	Ship-Towed Array Surveillance Systems	07	14,449	10,825	6,261	U
212	0204413N	Amphibious Tactical Support Units (Displacement Craft)	07	5,577	1,706	1,657	U
213	0204460M	Ground/Air Task Oriented Radar (G/ATOR)	07	30,669	22,205	21,367	U

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line	Program Element No Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
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214	0204571N	Consolidated Training Systems Development	07	129,251	75,508	56,741	U
215	0204575N	Electronic Warfare (EW) Readiness Support	07	68,393	42,702	62,006	U
216	0205601N	Anti-Radiation Missile Improvement	07	129,863	161,166	133,520	U
217	0205620N	Surface ASW Combat System Integration	07	28,439	29,217	28,804	U
218	0205632N	MK-48 ADCAP	07	69,800	70,542	114,492	U
219	0205633N	Aviation Improvements	07	118,010	126,371	132,486	U
220	0205675N	Operational Nuclear Power Systems	07	106,192	110,313	113,760	U
221	0206313M	Marine Corps Communications Systems	07	171,400	76,610	89,897	U
222	0206335M	Common Aviation Command and Control System (CAC2S)	07	4,484	4,406	9,324	U
223	0206623M	Marine Corps Ground Combat/Supporting Arms Systems	07	49,264	54,871	108,235	U
224	0206624M	Marine Corps Combat Services Support	07	28,892	10,421	13,185	U
225	0206625M	USMC Intelligence/Electronic Warfare Systems (MIP)	07	30,990	29,983	37,695	U
226	0206629M	Amphibious Assault Vehicle	07	5,324	6,469	7,551	U
227	0207161N	Tactical AIM Missiles	07	19,136	5,859	23,881	U
228	0207163N	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	33,289	40,253	32,564	U
229	0208043N	Planning and Decision Aid System (PDAS)	07			3,101	U
233	0303109N	Satellite Communications (SPACE)	07	29,932	50,978		U
234	0303138N	Afloat Networks	07	21,996	34,630	30,890	U
235	0303140N	Information Systems Security Program	07	43,866	38,814	33,311	U
236	0305192N	Military Intelligence Program (MIP) Activities	07	8,913	6,137	7,514	U

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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Department of the Navy
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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
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237	0305204N	Tactical Unmanned Aerial Vehicles	07	9,451	7,108	9,837	U
238	0305205N	UAS Integration and Interoperability	07	37,740	61,235	9,797	U
239	0305208M	Distributed Common Ground/Surface Systems	07	20,738	21,500	38,800	U
240	0305220N	MQ-4C Triton	07	11,784	11,120	13,029	U
241	0305231N	MQ-8 UAV	07	29,613	28,968	26,543	U
242	0305232M	RQ-11 UAV	07	509	537	533	U
243	0305234N	Small (Level 0) Tactical UAS (STUASL0)	07	9,410	8,773	1,772	U
244	0305239M	RQ-21A	07	10,914	10,853		U
245	0305241N	Multi-Intelligence Sensor Development	07	64,912	60,211	59,252	U
246	0305242M	Unmanned Aerial Systems (UAS) Payloads (MIP)	07	10,004	5,000	9,274	U
247	0305251N	Cyberspace Operations Forces and Force Support	07		34,792	36,378	U
248	0305421N	RQ-4 Modernization	07	195,445	129,164	134,323	U
249	0307577N	Intelligence Mission Data (IMD)	07			907	U
250	0308601N	Modeling and Simulation Support	07	11,672	8,683	9,772	U
251	0702207N	Depot Maintenance (Non-IF)	07	46,489	43,090	36,880	U
252	0708730N	Maritime Technology (MARITECH)	07	26,186	6,667	3,329	U
253	1203109N	Satellite Communications (SPACE)	07	14,407	35,956		U
9999	9999999999	Classified Programs		1,850,509	1,817,987	1,872,586	U
		Operational Systems Development		5,121,061	5,062,354	5,313,319	
254	0608013N	Risk management Information - Software Pilot Program	08		13,924	13,703	U

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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Total Obligational Authority
(Dollars in Thousands)

Appropriation: 1319N Research, Development, Test & Eval, Navy

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	S e c
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255	0608113N	Navy Next Generation Enterprise Network (NGEN) - Software Pilot program	08			955,151	U
256	0608231N	Maritime Tactical Command and Control (MTC2) - Software Pilot Program	08		10,868	14,855	U
		Software and Digital Technology Pilot Programs		-----	-----	-----	
					24,792	983,709	
				-----	-----	-----	
		Total Research, Development, Test & Eval, Navy		20,585,470	20,138,391	22,639,362	

*Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

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Department of Defense
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 Exhibit R-1 FY 2022 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

Appropriation -----	FY 2021 OCO Enacted*	FY 2022 Direct War and Enduring Costs -----
Research, Development, Test & Eval, Navy	59,562	52,365
Total Research, Development, Test & Evaluation	59,562	52,365

* Includes Division C, Title IX and Division J, Title IV of the Consolidated Appropriations Act, 2021 (P.L. 116-260).

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	FY 2021 OCO Enacted*	FY 2022 Direct War and Enduring Costs
Summary Recap of Budget Activities -----		
Advanced Component Development & Prototypes	55,418	51,198
System Development & Demonstration	1,144	1,167
Operational Systems Development	3,000	
Total Research, Development, Test & Evaluation	59,562	52,365
Summary Recap of FYDP Programs -----		
General Purpose Forces	3,000	
Research and Development	56,562	52,365
Total Research, Development, Test & Evaluation	59,562	52,365

* Includes Division C, Title IX and Division J, Title IV of the Consolidated Appropriations Act, 2021 (P.L. 116-260).

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	FY 2021 OCO Enacted*	FY 2022 Direct War and Enduring Costs
Summary Recap of Budget Activities -----	-----	-----
Advanced Component Development & Prototypes	55,418	51,198
System Development & Demonstration	1,144	1,167
Operational Systems Development	3,000	
Total Research, Development, Test & Evaluation	59,562	52,365
Summary Recap of FYDP Programs -----		
General Purpose Forces	3,000	
Research and Development	56,562	52,365
Total Research, Development, Test & Evaluation	59,562	52,365

* Includes Division C, Title IX and Division J, Title IV of the Consolidated Appropriations Act, 2021 (P.L. 116-260).

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Appropriation: 1319N Research, Development, Test & Eval, Navy

Line	Program Element No Number	Item -----	Act	FY 2021 OCO Enacted*	FY 2022 Direct War and Enduring Costs	S e c
--	-----	----	---	-----	-----	-
40	0603527N	RETRACT LARCH	04	36,500	36,497	U
59	0603654N	Joint Service Explosive Ordnance Development	04	14,461	10,904	U
64	0603734N	CHALK CORAL	04	3,000	3,750	U
72	0603795N	Land Attack Technology	04	1,457	47	U
		Advanced Component Development & Prototypes		55,418	51,198	
146	0604755N	Ship Self Defense (Detect & Control)	05	1,144	1,167	U
		System Development & Demonstration		1,144	1,167	
225	0206625M	USMC Intelligence/Electronic Warfare Systems (MIP)	07	3,000		U
		Operational Systems Development		3,000		
		Total Research, Development, Test & Eval, Navy		59,562	52,365	

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Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	60.968	22.043	20.862	-	20.862	-	-	-	-	-	-
0602: Electronics W/F Env Simulation (ECHO)	0.000	52.582	14.730	14.008	-	14.008	-	-	-	-	-	-
0672: Effect Nav E/W (ENEWS)	0.000	8.386	7.313	6.854	-	6.854	-	-	-	-	-	-
A. Mission Description and Budget Item Justification												
This is a continuing program that consolidates the design, fabrication and integration of Naval Electronic Warfare (EW) threat simulators for increased managerial emphasis and coordination. These simulator development efforts provide realistic Developmental and Operational Test and Evaluation environments to test EW systems and defensive tactics. These projects develop threat Anti-Air and Anti-Ship weapon system simulators in accordance with the Services' requirements.												
The 0602 Project, Electronic Warfare Environment Simulation, directly supports the Test and Evaluation resource requirements for all Naval Air EW development programs to include multi-spectral situational awareness and countermeasures. Programs in development and future programs include: Joint Strike Fighter, EA-18G, Low Band Transmitter, Next Generation Jammer, Advanced Anti-Radiation Guided Missile (AARGM), Long Range Anti-Ship Missile (LRASM), and Triton.												
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.												
B. Program Change Summary (\$ in Millions)				FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total				
Previous President's Budget				62.678	22.075	21.134	-	21.134				
Current President's Budget				60.968	22.043	20.862	-	20.862				
Total Adjustments				-1.710	-0.032	-0.272	-	-0.272				
• Congressional General Reductions				-	-0.032							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-0.891	0.000							
• SBIR/STTR Transfer				-0.819	0.000							
• Rate/Misc Adjustments				0.000	0.000	-0.272	-	-0.272				
Change Summary Explanation												
Schedule: Not applicable.												
Technical: Not applicable.												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development				Project (Number/Name) 0602 / Electronics W/F Env Simulation (ECHO)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0602: Electronics W/F Env Simulation (ECHO)	0.000	52.582	14.730	14.008	-	14.008	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objective of this project is development of necessary simulation facilities and approaches to allow determination of the effectiveness of Electronic Warfare (EW) in real world engagement situations and to support the introduction of modern, effective EW systems into Naval Aviation platforms. The heavy use of test resources by all Services demonstrates the importance of these assets.

The Electronic Warfare Environment Simulation project is unique because it is the only program within the Department of Defense which develops and provides Naval anti-air warfare threat assets for Test and Evaluation (T&E).

This project directly supports the T&E resource requirements for all Naval Air EW development programs, to include multi-spectral situational awareness and countermeasures. Programs in development and future programs include: Joint Strike Fighter, EA-18G, Low Band Transmitter, Next Generation Jammer, Advanced Anti-Radiation Guided Missile (AARGM), Long Range Anti-Ship Missile (LRASM), and Triton.

This project provides for the development of an Integrated Air Defense T&E capability to be fielded at each of the three sites comprising the Navy's Tri-Center complex: Naval Air Warfare Center Weapons Division, China Lake and Point Mugu in CA, and Naval Air Warfare Center Aircraft Division, Patuxent River, MD.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Requirements and Validation	0.590	1.046	0.605	0.000	0.605
Articles:	-	-	-	-	-
Description: Validate and track intel updates of the threat systems necessary for the operation and continuous improvement of Navy laboratories and ranges which provide engineering support, testing and analysis to the developers, integrators, testers and users of systems and technologies that counter or penetrate air defenses.					
FY 2021 Plans:					
- Continue to provide program management, systems engineering, and requirements identification for the development of simulators and foreign material acquisition.					
- Continue to validate simulators and stimulators at the Navy tri-lab centers.					
FY 2022 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development		Project (Number/Name) 0602 / Electronics W/F Env Simulation (ECHO)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Continue to provide program management, systems engineering, and requirements identification for the development of simulators and foreign material acquisition.</div> <div>- Continue to validate simulators and stimulators at the Navy tri-lab centers.</div> <div>FY 2022 OCO Plans: N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement: The funding decrease from FY 2021 to FY 2022 is due to a reduced requirement for validation reports due to the number of projects that completed in FY 2021 including the L-Band radar signal emulators, S-Band radar signal emulators, passive radar systems, early warning radar systems, signal detection systems, closed-loop threat simulator, and the conversion of a threat system.</div>						
<div>Title: Acquisition and Measurement Capabilities</div> <div>Articles:</div> <div>Description: Provide the test community with modern threat target acquisition systems and effective measurement systems necessary for Test and Evaluation of airborne early warning, situational awareness, detection and targeting systems and airborne response systems. Project investments in FY 2019, FY 2020 and FY 2021 support procurement and integration of advanced, threat representative electronic warfare (EW) target acquisition radars to establish a frequency diverse, dense and geographically dispersed threat integrated air defense system to support operationally realistic testing of F-35, Next Generation Jammer, EA-18G and Triton in a threat representative anti-access area denial environment that does not currently exist on any Department of Defense open air range.</div> <div>FY 2021 Plans: - Complete upgrades to the Naval Air Warfare Center ranges to support OT of the JSF by preparing sites for L-Band radar signal emulators, S-Band radar signal emulators, passive radar systems, early warning radar systems and signal detection and location systems. - Continue the development of two threat signal augmentation simulators for NAWCWD. - Initiate site preparation for three radar signal emulators at NAWCWD.</div> <div>FY 2022 Base Plans: - Continue the development of two threat signal augmentation simulators for NAWCWD.</div>		40.330 -	7.897 -	1.805 -	0.000 -	1.805 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development		Project (Number/Name) 0602 / Electronics W/F Env Simulation (ECHO)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue site preparation for three radar signal emulators at NAWCWD.						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: The funding decrease from FY 2021 to FY 2022 is due to the completion of upgrades to support JSF OT testing.						
Title: Engagement Capabilities		11.662	5.787	11.598	0.000	11.598
Articles:		-	-	-	-	-
Description: Provide the test community with the modern threat engagement systems necessary for Test and Evaluation of airborne alert, Situation Awareness, targeting systems and airborne response systems.						
FY 2021 Plans: - Complete the conversion of a threat system and integrate it at NAWC WD China Lake. - Continue the upgrade and integration of missile simulation models. - Continue the minor upgrades to open air and laboratory threat systems. - Complete the development of a naval-based threat radar closed-loop simulator for installation in laboratories at Naval Air Warfare Center Weapons Division and Naval Air Warfare Center Aircraft Division and designed for open air range implementation. Deliver products to the laboratories. -Initiate analysis and development of a reconfigurable closed-loop threat simulator designed for integration at laboratories and the open-air ranges.						
FY 2022 Base Plans: - Continue the upgrade and integration of missile simulation models. - Continue the minor upgrades to open air and laboratory threat systems. - Continue design and development of a reconfigurable closed-loop threat simulator for integration and utilization at laboratories and the open-air ranges. - Initiate upgrade of a closed-loop threat simulator by adding a new threat model to the simulators at Naval Air Warfare Center Weapons Division Pt. Mugu and Naval Air Warfare Center Aircraft Division Pax River. - Initiate analysis and design for a closed-loop simulator of a sea based surface to air missile system for laboratory and open-air range implementation at Naval Air Warfare Center Weapons Division Pt. Mugu and China Lake and Naval Air Warfare Center Aircraft Division Pax River.						
FY 2022 OCO Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604256N / <i>Threat Simulator Development</i>	Project (Number/Name) 0602 / <i>Electronics W/F Env Simulation (ECHO)</i>			
<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> The funding increase from FY 2021 to FY 2022 is due to initiation of multiple projects including upgrade of a closed-loop threat simulator by adding a new threat model, and analysis and design for a closed-loop simulator of a sea based surface to air missile system.					
Accomplishments/Planned Programs Subtotals	52.582	14.730	14.008	0.000	14.008
<u>C. Other Program Funding Summary (\$ in Millions)</u> N/A					
<u>Remarks</u>					
<u>D. Acquisition Strategy</u> Not Applicable.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development				Project (Number/Name) 0672 / Effect Nav E/W (ENEWS)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0672: Effect Nav E/W (ENEWS)	0.000	8.386	7.313	6.854	-	6.854	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Beginning in FY 2021, the Classified Program has been discontinued.

A. Mission Description and Budget Item Justification

The objective of the Effectiveness of Naval Electronic Warfare (EW) Systems (ENEWS) Project is the development, maintenance, upgrade and application of critical simulation assets to determine the effectiveness of Electronic Warfare (EW) for the surface Navy in simulated real-world engagement scenarios. ENEWS provides the Surface Navy with Anti-Ship Capable Missile (ASCM) simulators, Modeling and Simulation (M&S) and state-of-the-art evaluation facilities to support the introduction of modern, effective shipboard and off-board EW systems and tactics for EW Programs of Record (POR). ENEWS develops, maintains and operates hardware simulators, digital simulations (M&S) of legacy, modern and advanced threat ASCMs that provide EW PORs an integrated simulation capability through at-sea captive carry field trials with flyable simulators, digital ASCM models and the Central Target Simulator (CTS) hardware-in-the-loop evaluation facility. The reliance of ENEWS assets by the Naval Sea Systems Command, Commander, Operational Test and Evaluation Force (COMOPTEVFOR), Office of Naval Research (ONR) and other EW Research, Development, Test and Evaluation (T&E) agencies speaks to the overall importance of this project. The project provides support and effectiveness evaluations for EW system designs, Engineering Test (ET), Development Test (DT), Operational Test (OT) events including and the development and utilization of techniques and tactics. In the past, ENEWS quick reaction capabilities have provided significant support and solutions in crisis situations such as the Libyan crises, Iran threat, Persian Gulf crisis, and Operation Desert Shield/Storm. Simulation Display (SIMDIS) is a modeling tool developed under the ENEWS Project to support visualization of test events. SIMDIS has been adopted by most Department of Defense (DoD) T&E ranges as a effective tool that provides two and three dimensional graphical and video displays of live and post-test event data for EW T&E. One of the primary threats to surface ships is ASCM systems. The ENEWS Project is unique in that it is the only project within DoD dedicated to developing and providing realistic ASCM assets to test and evaluate the effectiveness of shipboard EW systems and tactics against these type threats. The ENEWS Project is a critical part of the Office of the Secretary of Defense Test Resource Master Plan. This plan employs many of ENEWS assets for planning, analysis, testing, and verification of shipboard and off-board Electronic Warfare systems techniques and tactics. As part of its normal activities, ENEWS provides Development Test and Evaluation (DT&E), Operational Test and Evaluation (OT&E), and Follow-on Operational Test and Evaluation (FOT&E) support to the surface Navy for all ship classes. ENEWS provides support to multiple surface Navy programs including: Surface Electronic Warfare Improvement Program (SEWIP), Advanced-Offboard Electronic Warfare (AOEW), Nulka, Rapid Anti-ship Integrated Defense System, MK245 Giant tests, advanced Infrared (IR) decoys, decoy placement, ship Infrared signature and radar cross section measurement of DDG-51, LPD-17, DD-21 and Patrol Craft class ships, and other ship self-defense initiatives, including the Future Naval Capability process. In addition, ENEWS assets support effectiveness evaluations for North Atlantic Treaty Organization (NATO) ships' Electronic Warfare systems in joint allied exercises and joint EW exercises such as Rim of the Pacific (RIMPAC) and Northern Edge test events.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Classified Program	4.000	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development		Project (Number/Name) 0672 / Effect Nav E/W (ENEWS)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Articles:		-	-	-	-	-
Description: Details about this program are classified.						
Details about this program and any changes are classified.						
FY 2021 Plans: N/A						
FY 2022 Base Plans: N/A						
FY 2022 OCO Plans: N/A						
Title: Hardware Simulation Systems		2.675	3.818	3.430	0.000	3.430
Articles:		-	-	-	-	-
Description: Maintain and perform hardware and software upgrades to the Effectiveness of Naval Electronic Warfare (EW) Systems (ENEWS) inventory of flyable and shore based Anti-Ship Capable Missile (ASCM) Electro-Optic/Infrared (EO/IR), Visible and Radio Frequency (RF) simulators and simulation systems. Perform periodic evaluation of IR and RF simulators to assess simulation operational performance and collect data for comparison with previously recorded data. Also includes development and maintenance of all simulator control consoles, captive-carry pods and power supplies.						
FY 2021 Plans: - Complete hardware and software upgrades to a programmable EO/IR airborne SIP. - Complete software upgrade a ground based EO/IR programmable simulator. - Complete hardware and software upgrades to towed EO/IR simulator. - Continue software upgrade for flyable EO/IR simulator. - Introduce two new simulation assets into the ENEWS inventory and prepare them for flight and field testing. - Initiate hardware upgrades for two RF and one EO/IR flyable simulators. - Maintain and upgrade 25 hardware simulators, 5 programmable simulators, simulator control panels and the antenna test rig to support the SEWIP Block 3 and AOEW effectiveness evaluations.						
FY 2022 Base Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development		Project (Number/Name) 0672 / Effect Nav E/W (ENEWS)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Continue to maintain custom instrumentation equipment such as digital data acquisition and ground truth systems.</div> <div>- Continue to maintain flight certifications and installation of systems in flyable captive carry pods for field-testing.</div> <div>- Continue to maintain and upgrade 25 hardware simulators, 5 programmable simulators, simulator control panels and the antenna test rig to support Surface Electronic Warfare Improvement Program (SEWIP) Block 3 and Advanced-Offboard Electronic Warfare (AOEW)effectiveness evaluations.</div> <div>- Complete hardware upgrade to one flyable Radio Frequency (RF) simulator and one programmable Electro-Optic/Infrared (EO/IR) flyable simulator.</div> <div>- Complete hardware and software upgrade to a second flyable RF hardware simulator.</div> <div>- Initiate/Integrate higher performance components for increased reliability.</div> <div>- Initiate one new simulation asset into the Effectiveness of Naval Electronic Warfare (EW) Systems (ENEWS) inventory and prepare system for flight and field-testing.</div> <div>- Initiate software upgrade to one Electro-Optic/Infrared (EO/IR) hardware simulator.</div> <div>FY 2022 OCO Plans: N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement: No significant changes from FY 2021 to FY 2022.</div>						
<div>Title: Simulation Characterization, Verification and Requirements</div> <div>Articles:</div> <div>Description: Provides for the generation of formal documentation of hardware-based Anti-Ship Capable Missile (ASCM) threat simulators. Develop reports that contain detailed descriptions and parametric data of the ASCM threat simulators and compares the simulator's data to the actual threat's parametric data. Provide technical management functions in support of the ENEWS project; engineering and technical support requirements for the ASCM simulators and upgrades to meet Development Test (DT)/Operational Test (OT) testing requirements, development of detailed test resource requirements and provides an interface between the Office of the Deputy Chief of Naval Operations for Information Warfare (OPNAV N2/N6), Office of Naval Research, and ENEWS oversight activities.</div> <div>FY 2021 Plans: - Continue to develop reports that compare parametric data of ASCM threat simulators to the parametric data of the actual threat for two RF simulators.</div>		0.300 -	0.745 -	0.800 -	0.000 -	0.800 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development		Project (Number/Name) 0672 / Effect Nav E/W (ENEWS)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div><div>- Provide technical and management support to the ENEWS project.</div><div>- Initiate and complete the FY 2021 ENEWS Program Management Plan.</div><div>- Draft and submit monthly reports, performance based management and analysis assessments and financial execution reports.</div><div>- Conduct characterization testing of two RF simulators and initiate development of verification reports that compares parametric data of the ASCM threat simulators to the parametric data of the actual threat.</div></div> <div><div>FY 2022 Base Plans:</div><div>- Continue to develop reports that compare parametric data of Anti-Ship Capable Missile (ASCM) threat simulators to the parametric data of the actual threat for two Radio Frequency (RF) simulators.</div><div>- Continue draft and submit monthly reports, performance based management assessments and financial execution reports.</div><div>- Continue to conduct characterization testing of two RF simulators and initiate development of verification reports that compares parametric data of the ASCM threat simulators to the parametric data of the actual threat.</div><div>- Continue to provide technical and management support to the ENEWS project.</div><div>- Initiate/Develop test plan for one RF simulator to identify parameters for measurement.</div><div>- Initiate and complete the FY2022 Effectiveness of Naval Electronic Warfare Systems (ENEWS) Program Management Plan.</div></div> <div><div>FY 2022 OCO Plans:</div><div>N/A</div></div> <div><div>FY 2021 to FY 2022 Increase/Decrease Statement:</div><div>No significant changes from FY 2021 to FY 2022.</div></div>						
<div>Title: Support and Computers Simulation Systems</div> <div>Articles:</div> <div>Description: Perform upgrades and preventative maintenance to Electro-Optic/Infrared, Digital, and Radio Frequency Laboratory Simulation Testing facilities including flight support equipment based on existing and emerging complex threat systems. Employ these simulation tools and assets into a total EW effectiveness methodology to evaluate EW systems effectiveness. Development of testing & evaluation scenarios and</div>		1.411 -	2.750 -	2.624 -	0.000 -	2.624 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021				
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604256N / Threat Simulator Development	Project (Number/Name) 0672 / Effect Nav E/W (ENEWS)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
environmental modeling to support Electronic Support (ES) and Electronic Attack (EA) testing and modify Anti-Ship Capable Missile (ASCM) threat simulators based on the latest data.						
FY 2021 Plans: - Continue maintenance and upgrades to EO/IR, digital, and RF laboratory simulation test and evaluation facilities and flight support equipment to provide ES and EA test support to SEWIP Block 3 and AOEW programs. - Continue to maintain and update the ENEWS CRUISE_Missiles ASCM models in support of M&S based EW testing for SEWIP Block 3, AOEW, and Navy Enterprise Testbed programs. - Continue updates to the Scenario and Environmental Model used to support open and closed loop simulations. - Continue upgrades to configuration control software library as new releases became available. - Continue to update and install new ship models into database and evaluate performance. - Initiate upgrades and user friendly enhancements to the Simulation Display (SIMDIS) toolset. - Evaluate various ship, Nulka, chaff and distraction chaff models for issues, test and repair any anomalies discovered. - Compare and verify the migration of existing missile simulations to the new real-time computer in CTS. At the end of FY 2021 five RF closed-loop missile simulations and two open-loop captive carry simulations will be migrated and verified in support of SEWIP Block 3 test requirements.						
FY 2022 Base Plans: - Continue maintenance and upgrades to EO/IR, digital, and RF laboratory simulation test and evaluation facilities and flight support equipment to provide ES and EA test support to SEWIP Block 3 and AOEW programs. - Continue to maintain and update the ENEWS CRUISE_Missiles ASCM models in support of M&S based EW testing for SEWIP Block 3, AOEW, and Navy Enterprise Testbed programs. - Continue updates to the Scenario and Environmental Model used to support open and closed loop simulations. - Continue upgrades to configuration control software library as new releases became available. - Continue to update and install new ship models into database and evaluate performance. - Continue upgrades and user friendly enhancements to the Simulation Display (SIMDIS) toolset. - Continue evaluation of various ship, Nulka, chaff and distraction chaff models for issues, test and repair any anomalies discovered. - Continue to compare and verify the migration of existing missile simulations to the new real-time computer in the Central Target Simulator (CTS). At the end of FY 2022 four Radio Frequency (RF) closed-loop missile						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604256N / <i>Threat Simulator Development</i>		Project (Number/Name) 0672 / <i>Effect Nav E/W (ENEWS)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
simulators will be migrated and verified in support of SEWIP Block 3 test requirements. Migration of the fifth closed-loop simulation will continue into FY 2023 along with two open-loop captive-carry simulations. - Initiate integration of the replacement Target/Array Controller (TAC) into CTS. - Initiate/Integrate and thoroughly test new threat model. - Initiate development and upgrade of tools to execute digital models for Navy studies and Development Test (DT)/Operational Test (OT) test events. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: No significant changes from FY 2021 to FY 2022.						
Accomplishments/Planned Programs Subtotals		8.386	7.313	6.854	0.000	6.854
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
Not applicable.						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>	PE 0604258N / <i>Target Systems Development</i>											
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	11.734	10.095	12.113	-	12.113	-	-	-	-	-	-
0609: <i>Aerial Target System Dev</i>	0.000	7.744	8.716	10.703	-	10.703	-	-	-	-	-	-
0612: <i>Surface Targets Development</i>	0.000	1.300	1.379	1.410	-	1.410	-	-	-	-	-	-
2159: <i>ASW TARGET</i>	0.000	2.690	0.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element funds the development of Aerial Target Systems, Unmanned Aerial Vehicle targets, Sea Surface Target Systems, Target Control systems, and associated Target Mission Support Systems, Target Threat Simulation Program and Target Augmentation and Auxiliary Systems required to simulate real world threats. These capabilities are required to execute developmental/operational test and evaluation of naval combat weapon systems and to satisfy advanced fleet training requirements while ensuring the Navy continues to develop threat simulations of emerging threat requirements.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST AND EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	12.027	10.224	15.198	-	15.198
Current President's Budget	11.734	10.095	12.113	-	12.113
Total Adjustments	-0.293	-0.129	-3.085	-	-3.085
• Congressional General Reductions	-	-0.129			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.293	0.000			
• Program Adjustments	0.000	0.000	-1.970	-	-1.970
• Rate/Misc Adjustments	0.000	0.000	-1.115	-	-1.115

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0604258N / Target Systems Development	
<p><u>Change Summary Explanation</u></p> <p>Project 0609. The Aerial Targets System Development FY 2022 funding request reflect the following adjustments since the previous President's Budget submission: decrease of \$1.970M to account for the availability of prior year execution balances, and decrease of \$1.111M for support reductions for a total overall reduction of \$3.081M.</p> <p>Project 0612. The Surface Target Development FY 2022 funding request was reduced by \$0.004M to account for miscellaneous adjustments.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604258N / <i>Target Systems Development</i>				Project (Number/Name) 0609 / <i>Aerial Target System Dev</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0609: <i>Aerial Target System Dev</i>	0.000	7.744	8.716	10.703	-	10.703	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of the Aerial Target Systems Development program is the design and development of threat representative subsonic and supersonic aerial targets that simulate threat weapon systems, threat aircraft or threat Unmanned Aerial Vehicles. In addition to representative air vehicles, this includes development of Target Control (TC) systems, and associated Target Augmentation and Auxiliary Systems (TA/AS) which are used to replicate specific threats. Targets and auxiliary payloads are developed to support test and evaluation of combat systems required to defend fleet surface and air units in a hostile environment. As to specific hardware development, this project includes:

- Supersonic Targets: Portfolio includes GQM-163A Supersonic Sea-Skimming Target (SSST), GQM-173A Multi-Stage Supersonic Target (MSST), and AQM-37 programs. Supersonic targets represent supersonic anti-ship cruise missile threats. The design and development of GQM-163A capabilities provide threat representative targets that are used in direct support of Developmental Test and Evaluation, Operational Test and Evaluation, and Live Fire Test and Evaluation of major combat weapons programs and to a lesser degree, support fleet training. Critical live-fire Test and Evaluation events are supported for AEGIS, DDG-1000, LHA-6, CVN-78, LCS, and LSD-41/49 (SM-6, SM-2, RAM, SSDS, and ESSM). The GQM-163A is a non-recoverable supersonic sea skimming aerial target, capable of speeds in excess of Mach 2.5 and cruise altitudes from 13.0 to 66 ft. The GQM-163A has also demonstrated higher altitude diving threat profiles. MSST was a supersonic development effort that was terminated on September 25, 2015. Once the contract termination costs have been determined by DCMA, funds may be required to cover settlement costs. However, the requirement still exists to provide a multi-stage vehicle presentation. New supersonic target development efforts include a replacement target for AQM-37.

- Subsonic Targets: Portfolio includes BQM-177A, and BQM-34S & BQM-74E subsonic target programs. The BQM-177A SSAT development primarily represents subsonic anti-ship cruise missile threats, replacing legacy BQM-74E targets with a modernized subsonic target with increased capabilities. The BQM-177A SSAT provides threat representation for developmental and operational test & evaluation events of major combat weapons systems programs and in support of fleet training events. Specifically, the BQM-177A SSAT provides critical live-fire test and evaluation events for AEGIS, SM-6, SM-2, RAM, and ESSM. BQM-34s are undergoing product improvement program efforts to increase their current performance envelope to meet evolving Fleet training requirements and weapon system test events.

- Target Threat Simulation Program (TTSP), Target Mission Support Systems (TMSS), and Target Control and Target Augmentation and Auxiliary Systems (TC/TA/AS) development: the TTSP portfolio provides the payload equipment required to electronically enhance aerial targets to provide threat representative radio frequency signatures, specifically the electronic attack and threat radar emissions (active emitters). Development of threat representative simulation components is on-going and required to keep pace with evolving threats and ensure that the Navy's threat simulation capabilities maintain warfighter readiness in the current environment. TC provides command and control of targets to enable the execution of threat-representative mission profiles. The mission also includes the design, development and qualification of various TMSS projects including but not limited to: Target RF datalink hardware, ground control hardware and software, scorer transponders, scoring ground stations, telemetry antennas, radar and locator beacons, identification, friend or foe transponders, and associated test sets. TA/AS enables each target to be

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604258N / Target Systems Development	Project (Number/Name) 0609 / Aerial Target System Dev					
uniquely configured for specific mission profiles and provide for high fidelity simulation of foreign threats. TA/AS-configured targets are used for radar acquisition test, electronic countermeasures (jamming) evaluation, infrared measurement and testing, radar cross section evaluation, decoy-effectiveness testing, maneuver analysis, electronic warfare evaluation, warhead-effectiveness testing and evaluation of fleet tactics. TA/AS scoring capabilities include both surface and airborne scalar scoring systems.							
Funding supports the development of increased capabilities to existing target platforms to modify the flight characteristics to be more aligned to threat anti-ship cruise missile performance. In addition to the design and development of target hardware and software, funding also supports studies performed by a University Affiliated Research Center (UARC) to specify and verify needed target performance for future target development. For the design and validation of targets under development, the UARC will provide engineering studies in areas such as structures, controls, guidance, and propulsion. For those hardware and software items presently under development by commercial vendors, the UARC will provide oversight and validation of vendor design and development approach.							
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Supersonic Targets - Development & Upgrades of Supersonic targets			0.237	0.242	0.247	0.000	0.247
Articles:			-	-	-	-	-
Description: Provides funding for the development of GQM-163A upgrades/evolutionary development to keep pace with evolving threat characteristics. Efforts include continued development of performance envelope characteristics to include flight termination performance, enhanced speed and distance capabilities, and multiple target launch capability. Funding will also support the development of other unique supersonic targets as required, and the close out of the GQM-173 Multi-Stage Supersonic Target development effort.							
FY 2021 Plans:							
Continue the development of GQM-163A Supersonic Sea Skimming Targets (SSST) improvements and increased capability efforts including deployable chaff, Electronic Warfare (EW) payloads, and enhanced flight performance. Continue to develop the modeling and simulation for incorporating the Chaff kit onto the GQM-163A and conduct HERO testing on the prototype system. Continue to develop the modeling and simulation for strakes. Continue SSST redesign and development efforts as required for improvements and infrastructure upgrades to include those required to accommodate increased simultaneous launches. Continue to support the development and test of other unique supersonic targets as required.							
FY 2022 Base Plans:							
Continue the development of GQM-163A Supersonic Sea Skimming Targets (SSST) improvements and increased capability efforts including deployable chaff, Electronic Warfare (EW) payloads, and enhanced flight performance. Continue to develop the modeling and simulation for strakes. Continue SSST redesign and development efforts as required for improvements and infrastructure upgrades to include those required to							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604258N / Target Systems Development		Project (Number/Name) 0609 / Aerial Target System Dev		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
accommodate increased simultaneous launches. Continue to support the development and test of other unique supersonic targets as required. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Increase of \$0.005M from FY 2021 to FY 2022 accounts for potential future Supersonic development efforts and inflation.						
Title: Subsonic Targets - Development & Upgrades of subsonic aerial targets with increased capabilities Articles: Description: A Subsonic Aerial Target (SSAT) replacement air vehicle, for the currently fielded BQM-74E target no longer in production, is required. The BQM-177A is a modernized subsonic target with increased capabilities providing realistic threat representation in support of critical live-fire Test and Evaluation events for major weapons systems and Fleet combat training. The target features increased capabilities to include higher speed, longer range, lower cruise altitudes and greater maneuverability. Other subsonic target alternatives are being explored. FY 2021 Plans: Continue site activations and required shipboard suitability testing in preparation of FOC. Continue engineering, manufacturing, training, logistics and test efforts of the BQM-177A SSAT. Incorporate Engineering Change Proposals and modernizations in the baseline design configuration as mission and threats evolve. Continue studies & development efforts on other subsonic target alternatives. FY 2022 Base Plans: Complete site activations and required shipboard suitability testing in preparation of FOC. Continue engineering, manufacturing, training, logistics and test efforts of the BQM-177A SSAT. Incorporate Engineering Change Proposals and modernizations in the baseline design configuration as mission and threats evolve. Continue studies & development efforts on other subsonic target alternatives. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement:		0.890 -	1.040 -	1.042 -	0.000 -	1.042 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604258N / Target Systems Development	Project (Number/Name) 0609 / Aerial Target System Dev				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Increase of \$0.002M from FY 2021 to FY 2022 accounts for potential future Subsonic development efforts and inflation.							
<p>Title: Target Threat Simulation Program (TTSP), Target Mission Support Systems (TMSS), Target Control (TC) and Target Augmentation and Auxiliary Systems (TA/AS)</p> <p>Articles:</p> <p>Description: The Target Threat Simulation Program (TTSP) provides the payload equipment required to electronically enhance aerial/surface targets to provide threat representative Radio Frequency signatures, specifically the Electronic Attack and Threat Radar Emissions (Active Emitters). The TTSP accomplishes this by providing a collection of modules which are integrated into individual targets in various configurations to provide the ability to simulate the RF environment. TTSP equipment in various configurations is certified for carriage in aerial/surface targets. Funding supports the continued development of the TTSP portfolio so that the Navy can keep pace with emerging enemy threats. Funding is provided for the development of Target Control (TC) systems and Target Augmentation and Auxiliary Systems (TA/AS) capable of supporting Test and Evaluation (T&E) and fleet training activities to ensure emerging threat simulation requirements are met. Target Control Systems (TCS) involve the improved command and control systems capable of controlling multiple targets simultaneously while delivering adequate fidelity of T&E telemetry data. The TMSS program portfolio provides target control, scoring, location, and navigation of air, land and seaborne targets for fleet training and weapons systems test and evaluation. Funding also supports the design, development and qualification of TMSS including but not limited to the current and next generation TC systems, scalar scorers, scoring ground station, telemetry antennas, radar and locator beacons, identification friend or foe and associated test sets. Augmentation and auxiliary systems must be capable of augmenting targets in support of radar acquisition test, electronic countermeasures (jamming) evaluation, infrared measurement/test, radar cross section evaluation, decoy effectiveness, maneuver analysis, electronic warfare, warhead effectiveness and evaluation of fleet tactics, readiness, and training.</p> <p>FY 2021 Plans: Continue development, prototyping and integration of threat electronic attack & active emitter simulators to ensure the Fleet meets emerging threat requirements. Begin development of miniaturized electronic payloads. Continue development and qualification of the SNTC BLK 4 Ground Control Station with associated hardware and software upgrades. Continue development of the DSQ-50B Vector Scorer. Continue fielding the replacement AN/DPN-90 Radar Beacon. Continue fielding the DSQ-50A Scalar Scorer and its associated</p>			6.617 -	7.434 -	9.414 -	0.000 -	9.414 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021							
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604258N / <i>Target Systems Development</i>		Project (Number/Name) 0609 / <i>Aerial Target System Dev</i>							
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)											
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total					
<p>Ground Telemetry Station and continue fielding the TCS Radio Frequency Subsystem (SNTC BLK 3) upgrade hardware, both two to three year processes.</p> <p><i>FY 2022 Base Plans:</i> Continue development of more advanced emitters and electronic attack payloads. The Supersonic Kitten advanced Digital Radio Frequency Module for the GQM-163A integration effort and Low Rate Initial Production is planned as is SubRESS emitter upgrades. Towed Decoy integration on the BQM-177A will occur, along with beginning integration of a dual band decoy system. New antenna developments are required to meet fleet operational test scenarios as well as RDTE testing needs. Continue development and qualification of the SNTC BLK 4 Ground Control Station with associated hardware and software upgrades. Continue development of the DSQ-50B Vector Scorer. Continue fielding the replacement AN/DPN-90 Radar Beacon. Continue fielding the DSQ-50A Scalar Scorer and its associated Ground Telemetry Station and continue fielding the TCS Radio Frequency Subsystem (SNTC BLK 3) upgrade hardware, both two to three year processes.</p> <p><i>FY 2022 OCO Plans:</i> N/A</p> <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Increase of \$1.980M from FY 2021 to FY 2022 for the Target Threat Simulation Payload (TTSP) to develop miniaturized TTSP payloads currently used on Supersonic and Subsonic targets. These payloads emulate threat electronic warfare signals aboard aerial targets to challenge the defending platforms electronic surveillance. The increase specifically covers miniaturization of existing emitters for use aboard the recently fielded BQM-177A - having a smaller payload section over the BQM-74E and also for new threat emitter development aboard the GQM-163A supersonic target. Future test events require dual payloads (Emitter and Jx) as required by DDG FLT III, AEGIS ACB 16, CVN-78 and DDG-1000 weapon defense systems.</p>											
Accomplishments/Planned Programs Subtotals		7.744	8.716	10.703	0.000	10.703					
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• WPN 2280: <i>Aerial Targets</i>	150.561	168.261	150.339	-	150.339	-	-	-	-	-	-
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604258N / <i>Target Systems Development</i>	Project (Number/Name) 0609 / <i>Aerial Target System Dev</i>
<p>D. Acquisition Strategy</p> <p>Supersonics: The GQM-163A Supersonic Sea-Skimming Target (SSST) is an Acquisition Category II program. The acquisition strategy includes the continued development of Quad Launch, design efforts for integration of new Radome and Radar Altimeter, Electronic Warfare (EW) systems and other Engineering Change Proposals as required to emulate emerging threat systems. These development efforts will continue to be rolled into the production baseline. Production efforts are expected to continue at higher quantities in order to meet projected MDAP T&E requirements. Additionally, development of alternative supersonic targets is being explored.</p> <p>Subsonics: The Subsonic Aerial Target (SSAT) program is an ACAT-IV program. The Low Rate Initial Production (LRIP) 3 contract was awarded in 3rd Quarter of FY19 with Full Rate Production (FRP) Contracts to follow. Engineering Change Proposals will be contracted as required via IDIQ contract vehicles to keep pace with emerging threat systems and changes rolled into the production baseline. Development efforts for other subsonic targets will be resourced via other contracting efforts as required.</p> <p>Target Threat Simulation Program (TTSP), Target Mission Support Systems (TMSS), Target Control, and Target Augmentation and Auxiliary Systems: The acquisition strategy for these components vary, depending on industry responses to government issued Requests for Information, but most are acquired via Firm Fixed Price IDIQ contracts.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604258N / Target Systems Development				Project (Number/Name) 0612 / Surface Targets Development			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0612: Surface Targets Development	0.000	1.300	1.379	1.410	-	1.410	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops seaborne targets and their related target augmentation systems in support of air-to-surface and surface-to-surface weapons test and evaluation and fleet training.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Surface Targets Development	1.300	1.379	1.410	0.000	1.410
Articles:	-	-	-	-	-
FY 2021 Plans: Research extension and integration of swarm remote control capabilities to other powered seaborne targets including Fast Attack Craft Target (FACT) and QST-35. Develop refinements to swarm remote control system based upon feedback from Fleet end users and target operators. Research potential manufacturing of seaborne targets from materials with lower environmental impact. Integrate marine traffic awareness/Automatic Identification System (AIS) capability into Portable Command and Control Unit (PCCU). Research replacement low-cost stationary floating target for crew-served weapons training. Research improved system for over-the-horizon command and control for Seaborne Targets. Develop and test replacement human-representative training target for use on seaborne targets. Research command and control interface for next-generation Mobile Ship Target.					
FY 2022 Base Plans: Develop new antenna arrays to support fixed and portable SeaCAN application. Investigate satellite short data burst capability for command and control of all surface target platforms. Research increased positional accuracy of powered and towed targets. Research cyber vulnerability of seaborne target systems and develop improvements. Develop a small air vehicles target deployment system from remote controlled targets. Investigate Ethernet command and control of targets from remote locations. Research internet cloud capability for hosting Portable Command and Control Units (PCCU) applications and security patch updates. Research					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604258N / <i>Target Systems Development</i>		Project (Number/Name) 0612 / <i>Surface Targets Development</i>	

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
scoring capability for multi-arrayed target flotillas supporting over-the-horizon large area weapons. Test operational functionality of enhanced portability PCCU controllers in shipboard applications. <u>FY 2022 OCO Plans:</u> N/A <u>FY 2021 to FY 2022 Increase/Decrease Statement:</u> Project 0612 Surface Targets Development FY2022 funding request increased slightly above inflation due to increased weapon system Test and Evaluation and Fleet training requirements.					
Accomplishments/Planned Programs Subtotals	1.300	1.379	1.410	0.000	1.410

<u>C. Other Program Funding Summary (\$ in Millions)</u>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/5429: ASW SE	6.869	10.851	18.500	-	18.500	-	-	-	-	-	-
<u>Remarks</u> Other Program Funding reflects OPN/5429 funds directly associated with Project 0612, not the total value of the OPN Line Item.											
<u>D. Acquisition Strategy</u> Not applicable.											

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604258N / <i>Target Systems Development</i>				Project (Number/Name) 2159 / ASW TARGET			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2159: ASW TARGET	0.000	2.690	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Note This project is a new start in FY 2020.												
A. Mission Description and Budget Item Justification RDT&E,N Budget provides funding for Small Business Innovation Research (SBIR) Phase 2.5 for sprint speed and frequency expansion to improve performance capability for the Mk39 Mod 3 Expendable Mobile ASW Training Target (EMATT). This effort supports the transition of the Sprint Speed and Low Frequency Improvement Phase 2.5 efforts into MK 39 Mod 3 EMATT production and starts to investigate Continuous Active Sonar (CAS) capability to provide better detection performance and provide operators with a continuous track. Sprint Speed and Frequency Expansion upgrade allows EMATT to more closely represent submarine tactics for evasion and will make it compatible with new ASW sensors like the LCS ASW mission package.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: New Accomplishment/Planned Program Entry							2.690	0.000	0.000	0.000	0.000	
Articles:							-	-	-	-	-	
FY 2021 Plans: N/A												
FY 2022 Base Plans: N/A												
FY 2022 OCO Plans: N/A												
Accomplishments/Planned Programs Subtotals							2.690	0.000	0.000	0.000	0.000	
C. Other Program Funding Summary (\$ in Millions) N/A												
Remarks												
D. Acquisition Strategy N/A												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	108.129	105.195	84.617	-	84.617	-	-	-	-	-	-
2195: T & E Investment	0.000	86.891	85.195	84.617	-	84.617	-	-	-	-	-	-
9999: Congressional Adds	0.000	21.238	20.000	0.000	-	0.000	-	-	-	-	-	-
A. Mission Description and Budget Item Justification												
This project corrects major deficiencies, improves Test & Evaluation (T&E) capabilities, and increases T&E support effectiveness at Navy Major Range and Test Facility Base ranges and facilities. The T&E Investment project improves, modernizes and adds new test capabilities at the following test facilities: the Naval Undersea Warfare Center Division Newport Atlantic Undersea Test and Evaluation Center, Andros Island, Bahamas; the Nanoose and Dabob ranges of the Naval Undersea Warfare Center Division Keyport, Keyport, WA; the Sea Range, Land Ranges, Target Operations, Ordnance T&E Facility, Test Wing Pacific located at the Naval Air Warfare Center Weapons Division, Point Mugu, CA and China Lake, CA; and the Atlantic Test Range, Air Combat Environment T&E Facility, Electromagnetic Environmental Effects, Air Vehicle Modification and Instrumentation facility, Test Wing Atlantic, Target Operations, and the Propulsion Systems Evaluation Facility located at the Naval Air Warfare Center Aircraft Division, Patuxent River, MD and the test and evaluation capabilities located at the Pacific Missile Range Facility, Kauai, HI.												
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.												
B. Program Change Summary (\$ in Millions)				FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total				
Previous President's Budget				107.348	85.195	73.510	-	73.510				
Current President's Budget				108.129	105.195	84.617	-	84.617				
Total Adjustments				0.781	20.000	11.107	-	11.107				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	20.000							
• Congressional Directed Transfers				-	-							
• Reprogrammings				2.000	0.000							
• SBIR/STTR Transfer				-1.219	0.000							
• Program Adjustments				0.000	0.000	11.900	-	11.900				
• Rate/Misc Adjustments				0.000	0.000	-0.793	-	-0.793				
Congressional Add Details (\$ in Millions, and Includes General Reductions)										FY 2020	FY 2021	
Project: 9999: Congressional Adds												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021	
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0604759N / <i>Major T&E Investment</i>	
<u>Congressional Add Details (\$ in Millions, and Includes General Reductions)</u>		FY 2020	FY 2021
Congressional Add: <i>Fifth Generation Radar Ground Test Upgrades</i>		7.723	0.000
Congressional Add: <i>Complex Electronic Warfare Test Equipment</i>		4.827	0.000
Congressional Add: <i>Undersea range modernization</i>		3.861	10.000
Congressional Add: <i>Naval research laboratory facilities</i>		4.827	0.000
Congressional Add: <i>Integrated Sensor Effectiveness Test</i>		0.000	10.000
Congressional Add Subtotals for Project: 9999		21.238	20.000
Congressional Add Totals for all Projects		21.238	20.000
<u>Change Summary Explanation</u> The FY2022 funding request was reduced by \$1.471 million to account for the availability of prior year execution balances. The funding increase in FY 2022 is due to the replacement of the AUTECH hydrophone tracking system, AUTECH tracking displays, development of an acoustic beamforming capability and procurement of range radio communication equipment. Increases are also due to the initiation of the fiber replacement project at NAWCWD China Lake and the initiation of telemetry collection and processing capabilities at NAWCWD and PMRF.			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment				Project (Number/Name) 2195 / T & E Investment			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2195: T & E Investment	0.000	86.891	85.195	84.617	-	84.617	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project corrects major deficiencies, improves Test & Evaluation (T&E) capabilities, and increases T&E support effectiveness at Navy Major Range and Test Facility Base ranges and facilities. The T&E Investment project improves, modernizes and adds new test capabilities at the following test facilities: the Naval Undersea Warfare Center Division Newport Atlantic Undersea Test and Evaluation Center (AUTEC), Andros Island, Bahamas; the Nanoose and Dabob ranges of the Naval Undersea Warfare Center Division Keyport, Keyport, WA; the Sea Range, Land Ranges, Target Operations, Ordnance T&E Facility, Test Wing Pacific located at the Naval Air Warfare Center Weapons Division, Point Mugu, CA and China Lake, CA; and the Atlantic Test Range, Air Combat Environment T&E Facility, Electromagnetic Environmental Effects, Air Vehicle Modification and Instrumentation facility, Test Wing Atlantic, Target Operations, and the Propulsion Systems Evaluation Facility located at the Naval Air Warfare Center Aircraft Division, Patuxent River, MD and the test and evaluation capabilities located at the Pacific Missile Range Facility, Kauai, HI.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: UNDERSEA RANGE INVESTMENTS	6.281	11.736	21.599	0.000	21.599
Articles:	-	-	-	-	-
<p>Description: This effort funds the modernization, upgrades, and new test and evaluation capabilities required at the Navy's Major Range Test Facility Base undersea ranges, to include AUTEC, Andros Island, Bahamas and the Nanoose and Dabob ranges of the Naval Undersea Warfare Center Division Keyport, Keyport, WA.</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> - Continue the minor upgrade and modernization of test capabilities at AUTEC, Nanoose and Dabob. - Continue modernization of range data management system at Nanoose and Dabob. - Complete tracking system modernization at Nanoose and Dabob. - Complete torpedo control panel modernization at Nanoose and Dabob. - Complete range telemetry and communications upgrade at Nanoose and Dabob. - Complete procurement of small range craft for unmanned underwater vehicle (UUV) work at Nanoose and Dabob. - Complete cyber security upgrades to critical range instrumentation and networks at Nanoose and Dabob. - Initiate replacement of underwater cables to hydrophone arrays at Nanoose and Dabob. - Initiate upgrade to acoustic acquisition systems and replace the acoustic signal processing systems at Nanoose and Dabob. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment		Project (Number/Name) 2195 / T & E Investment		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Initiate replacement of the acoustic signal processing system at AUTECH.</div> <div>- Initiate replacement of the shore electronics interface to the hydrophone system at AUTECH.</div> <div>- Initiate replacement of the array structures at Nanoose and Dabob.</div> <div>FY 2022 Base Plans:</div> <div>- Continue the minor upgrade and modernization of test capabilities at AUTECH, Nanoose and Dabob.</div> <div>- Continue replacement of underwater cables to hydrophone arrays at Nanoose and Dabob.</div> <div>- Continue upgrade to acoustic acquisition systems and replace the acoustic signal processing systems at Nanoose and Dabob.</div> <div>- Continue replacement of the acoustic signal processing system at AUTECH.</div> <div>- Continue replacement of the array structures at Nanoose and Dabob.</div> <div>- Complete modernization of range data management system at Nanoose and Dabob.</div> <div>- Complete replacement of the shore electronics interface to the hydrophone system at AUTECH.</div> <div>- Initiate replacement of the hydrophone tracking system at AUTECH.</div> <div>- Initiate replacement of the tracking display system at AUTECH.</div> <div>- Initiate modernization of acoustic tracking and beamforming capability at Nanoose and Dabob.</div> <div>- Initiate replacement of radio communication system at Nanoose and Dabob.</div> <div>- Initiate replacement of universal winch fiber optic at Nanoose and Dabob.</div> <div>- Initiate real time tracking software upgrade at Nanoose and Dabob.</div> <div>FY 2022 OCO Plans:</div> <div>N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement:</div> <div>The funding increase from FY 2021 to FY 2022 is due to the initiation of multiple projects including the replacement of the AUTECH hydrophone tracking system, AUTECH tracking displays, development of an acoustic beamforming capability and procurement of range radio communication equipment.</div>						
Title: OPEN AIR RANGE INVESTMENTS		36.444	37.695	38.902	0.000	38.902
Articles:		-	-	-	-	-
Description: This effort funds the modernization and upgrades of existing capabilities and the development of new T&E capabilities required at the Navy's Major Range Test Facility Base open air ranges at the Naval Air Warfare Center Aircraft Division (NAWCAD), Patuxent River, MD, Naval Air Warfare Center Weapons Division (NAWCWD), Point Mugu, CA and China Lake, CA and Pacific Missile Range Facility (PMRF), Kauai, HI.						
FY 2021 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment		Project (Number/Name) 2195 / T & E Investment		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div><div><div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><di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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment		Project (Number/Name) 2195 / T & E Investment		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Complete optical sensor modernization at PMRF.</div> <div>- Initiate and complete phase 1 fiber replacement at NAWCWD South Range.</div> <div>- Initiate upgrades to telemetry collection and processing capabilities at NAWCWD.</div> <div>- Initiate upgrades to telemetry collection and processing capabilities at PMRF.</div> <div>FY 2022 OCO Plans: N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement: The funding increase from FY 2021 to FY 2022 is due to the initiation of the fiber replacement project at NAWCWD China Lake and the initiation of telemetry collection and processing capabilities at NAWCWD and PMRF.</div>						
<div>Title: TEST FACILITIES INVESTMENTS</div> <div>Articles:</div> <div>Description: This effort funds the modernization and upgrades of existing capabilities and the development of new Test & Evaluation capabilities required at the Navy's Major Range Test Facility Base ground test facilities at NAWCAD, Patuxent River, MD, and NAWCWD, Point Mugu, CA and China Lake, CA.</div> <div>FY 2021 Plans:<div>- Continue the minor upgrade and modernization of test capabilities at NAWCAD and NAWCWD and the upgrade to general instrumentation and equipment.</div><div>- Complete the test cell performance improvement at NAWCAD. This effort will upgrade Propulsion Systems Evaluation Facility turbine engine test cell to provide uniform temperature and pressure intake airflow and improve dynamometer performance.</div><div>- Continue the modernization of the insensitive munitions test arena at NAWCWD. Tasks include renovating and modernizing the control room, refurbishing the test pads and cable paths to the test arena and replacing associated cabling between the test pad and control room at the Ordnance test facility.</div><div>- Complete the implementation of a free standing chamber NAWCAD. This will allow an increased through put of testing by allowing limited anechoic testing in spaces that were not designed to be anechoic.</div><div>- Initiate ordnance test arena at NAWC WD by replacing conduits, cabling, firing control system and data collection system.</div><div>- Initiate helicopter drive system upgrade by aligning test stand and replacing loading and instrumentation at NAWCAD.</div></div>		44.166 -	35.764 -	24.116 -	0.000 -	24.116 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment		Project (Number/Name) 2195 / T & E Investment		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Modeling and Simulation:</p> <ul style="list-style-type: none">- Continue multi-site and multi-domain modeling and simulation test bed design. Integrate virtualized representations of high-priority Navy systems including Littoral Combat Ship, P-8A and MQ-4C Triton into complex digital battle space and National Cyber Range. Implement virtualization and integration methodology for use in DON Modeling & Simulation/Live Virtual Constructive (LVC) Environment. Implement enterprise toolbox to integrate diverse models into prototype laboratory environment.- Continue common modeling and simulation tool design effort. Implement and test architecture interface to integrate emerging Threat Intelligence products with hardware representations. Threat Intelligence models will include the Integrated Threat Analysis Simulation Environment.- Continue advanced immersive visualization of battlespace and red/blue interactions. Demonstrate immersive visualization model suite, which added complex Electronic Warfare (EW) effects, to evaluate the level of improvement over the traditional tools. Analyze visualization areas still requiring refinement and develop implementation plan.- Continue update of Naval model and simulation environment to implement improved electronic warfare modeling effect and interactions. Test and analyze the fidelity and accuracy of the Electronic Warfare (EW) interactions that are available because of the improvements to the modeling environment. Testing will include virtual and hardware-in-the-loop labs and ranges to create a coherent Live Virtual Constructive (LVC) EW evaluation environment.- Continue update to Family Of Simulation models to account for offensive and defensive cyber effects in the battlespace. Integrate Automated Intelligence and Machine Learning models with the Next Generation Threat System environment then assess the improvements available to both test and training. <p>FY 2022 Base Plans:</p> <ul style="list-style-type: none">- Continue the minor upgrade and modernization of test capabilities at NAWCAD and NAWCWD and the upgrade to general instrumentation and equipment.- Continue the modernization of the insensitive munitions test arena at NAWCWD. Tasks include renovating and modernizing the control room, refurbishing the test pads and cable paths to the test arena and replacing associated cabling between the test pad and control room at the Ordnance test facility.- Continue ordnance test arena at NAWCWD by replacing conduits, cabling, firing control system and data collection system.- Complete helicopter drive system upgrade by aligning test stand and replacing loading and instrumentation at NAWCAD.- Initiate modernization of environmental test chambers at NAWCWD.- Initiate modernization of the electromagnetic radiation test area at NAWCAD.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment		Project (Number/Name) 2195 / T & E Investment		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Initiate development of direct drive electromagnetic pulse test capability at NAWCAD.</div> <div>- Initiate development of an integrated fire control test environment at NAWCAD.</div> <div>Modeling and Simulation:</div> <div>- Continue multi-domain testbed improvements and integration using best practices, open interfaces and ensure persistent connectivity to enhance integrated Live Virtual Constructive (LVC) capability across Department of the Navy test and evaluation labs, facilities and ranges.</div> <div>- Continue update of Naval modeling and simulation environment to implement improved electronic warfare modeling effects, propagation and interactions. Improve fidelity and accuracy of the Electronic Warfare (EW) interactions and environmental effects (including Radio Frequency, Electro-Optical and Infrared (RF/EO/IR) . Testing will include virtual and hardware-in-the-loop facilities and ranges to create coherent Live, Virtual, and Constructive (LVC) EW evaluation environments.</div> <div>- Continue to develop architecture to integrate emerging threat intelligence products for both classified software, virtual and low-cost hardware representations. Task will improve and integrate Integrated Threat Analysis Simulation Environment (ITASE) to meet Navy requirements. Task will integrate classified mixed hardware / software threat emulations into a real-time LVC environment. Threat will be available through innovative repository/cloud solutions.</div> <div>- Continue updates to Family of Simulation models to account for offensive and defensive cyber effects in the battlespace. Integrate automated intelligence and machine learning models with the Next Generation Threat System (NGTS) environment then assess the improvements available to both test and training.</div> <div>- Complete advanced immersive visualization of battlespace and red/blue interactions. Demonstrate immersive visualization model suite, which added complex Electronic Warfare (EW) effects, to evaluate the level of improvement over the traditional tools. Analyze visualization areas still requiring refinement and develop implementation plan.</div> <div>- Initiate development of high fidelity blue-on-red and red-on-blue jamming technique models and simulations including blue-on-blue EMI that are realistic and observed across all systems. Provide a means to test and train in degraded and denied environments for Communications, Global Positioning System (GPS), Link, and Radar modes.</div>						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- Initiate integration of multi-domain reference interoperability emulators, low fidelity capability assessment tools and battlespace suites in labs and testbeds designed to allow platforms to assess performance early in system development.</p> <p>- Initiate developing scalable and reusable M&S environments for experimenting and testing with new concepts and warfighting capabilities across Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) spectrum. Task includes development of M&S capabilities in order to support T&E requirements associated with subsurface environment capabilities, undersea sensors, data fusion capabilities, and measuring the effectiveness of Counter-Intelligence Surveillance, Reconnaissance and Targeting (C-ISRT), Cyber and Electronic Warfare effects in near real time supporting Electromagnetic Maneuver Warfare (EMW) and Integrated Fires (IF) (e.g., Military Deception/Operational Deception (MILDEC/OPDEC), Computer Network Attack (CNA), Computer Network Exploitation (CNE), and active / passive Electronic Attack (EA).</p> <p>- Initiate development of Next Generation M&S Space capability for users across the Test and Evaluation labs, facilities and ranges including LVC, Analysis, Tactics, Techniques and Procedures (TTP) planning, Testing, Training, and Fleet Design activities.</p> <p>- Initiate enhancement of modeling behaviors (e.g. evasion rules and environment data from blue and red torpedoes) to support assessment of autonomous behaviors in a warfighting environment, improve decision making via mining of simulation / LVC big datasets, uncover hidden patterns, reveal trends, and understand SoS interactions.</p> <p>- Initiate advanced improvements of intelligent models to realistically represent the Battlespace as well as analyze and assess Modeling and Simulation (M&S) environments. Simulate intelligent enemy agent tactics to provide realistic OPFOR for T&E.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The funding decrease from FY 2021 to FY 2022 is due to reduced requirements in the Modeling and Simulation portfolio after several years at a high investment level.</p>						
Accomplishments/Planned Programs Subtotals		86.891	85.195	84.617	0.000	84.617

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment	Project (Number/Name) 2195 / T & E Investment
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy Not Applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment				Project (Number/Name) 9999 / Congressional Adds			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
9999: Congressional Adds	0.000	21.238	20.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Congressional Add												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2020	FY 2021			
Congressional Add: Fifth Generation Radar Ground Test Upgrades								7.723	0.000			
FY 2020 Accomplishments: N/A												
FY 2021 Plans: N/A												
Congressional Add: Complex Electronic Warfare Test Equipment								4.827	0.000			
FY 2020 Accomplishments: N/A												
FY 2021 Plans: N/A												
Congressional Add: Undersea range modernization								3.861	10.000			
FY 2020 Accomplishments: N/A												
FY 2021 Plans: Initiate and complete efforts to support Undersea ranges. Modernize the systems and equipment at the Undersea Ranges.												
Congressional Add: Naval research labratory facilities								4.827	0.000			
FY 2020 Accomplishments: N/A												
FY 2021 Plans: N/A												
Congressional Add: Integrated Sensor Effectiveness Test								0.000	10.000			
FY 2020 Accomplishments: N/A												
FY 2021 Plans: Initiate engineering and management efforts for the Integrated Sensor Effectiveness Test requirements. Support Electronic Warfare Integrated Reprogramming Database (EWIRDB) Software Operational, Maintenance, and Enhancement Support on the Automated Virtual Information Production Support System (AVIPSS). Modernize the data gathering systems and equipment at the ranges.												
Congressional Adds Subtotals								21.238	20.000			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0604759N / Major T&E Investment	Project (Number/Name) 9999 / Congressional Adds
C. Other Program Funding Summary (\$ in Millions) N/A		
<u>Remarks</u>		
D. Acquisition Strategy Not required for Congressional Adds		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605152N / Studies & Analysis Supt - Navy							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	3.913	3.089	3.108	-	3.108	-	-	-	-	-	-
2092: Naval Warfare Studies	0.000	0.863	0.025	0.000	-	0.000	-	-	-	-	-	-
2097: Manpower Personnel & Training	0.000	0.511	0.501	0.506	-	0.506	-	-	-	-	-	-
3310: Naval Aviation Developmental Planning	0.000	2.539	2.563	2.602	-	2.602	-	-	-	-	-	-
A. Mission Description and Budget Item Justification												
This program provides analytical support to the Secretary of the Navy and the Chief of Naval Operations as a basis for major policy, planning and acquisition program execution decisions. It supports research and development strategy development and planning. It supports studies in the areas of manpower, personnel, training, and aviation. It also develops analytical tools for evaluating effectiveness of U.S. weapons against potential foreign threat ships and submarines.												
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.												
B. Program Change Summary (\$ in Millions)				FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total				
Previous President's Budget				3.908	3.089	3.158	-	3.158				
Current President's Budget				3.913	3.089	3.108	-	3.108				
Total Adjustments				0.005	0.000	-0.050	-	-0.050				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				0.109	0.000							
• SBIR/STTR Transfer				-0.104	0.000							
• Program Adjustments				0.000	0.000	0.000	-	0.000				
• Rate/Misc Adjustments				0.000	0.000	-0.050	-	-0.050				
Change Summary Explanation												
2092: Program funding zeroed out in FY 2022 due to discontinuing Resource Allocation Model analytic decision support												
Technical: Not applicable.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605152N / Studies & Analysis Supt - Navy	
Schedule: Not applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605152N / Studies & Analysis Supt - Navy				Project (Number/Name) 2092 / Naval Warfare Studies			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2092: Naval Warfare Studies	0.000	0.863	0.025	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports detailed mission, capability, and technical analysis of future naval warfighting requirements. The Resource Allocation Model (RAM) is an analytic decision support tool to aid Navy leadership with both investment and divestment programming decisions. This methodology provides an assessment process that fosters informed, understandable, repeatable investment decisions with consistent, pedigreed, and retrievable information. The focus of this work adds fidelity to the system through the inclusion of Mission Technical Baselines and Integrated Capabilities Technical Baselines data to identify program of record integration and interoperability dependencies to inform investment/divestment decisions. It provides leadership and resource sponsors with a starting point for their offset decision process as well as an issue ranking capability. This effort captures and maps issues/funding adjustments, and providing a system capable of identifying fiscal interdependencies and consideration to risk in order to increase accuracy in calculating programmatic risk.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Resource Allocation Model (RAM)	0.863	0.025	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: Continue updating the Resource Allocation Model to provide an analytic portfolio management methodology to aid Navy leadership with investment decision support. Provide an assessment process that fosters informed, understandable, repeatable investment decisions with consistent, pedigreed, and retrievable information. Assess programs of record and their proposed modifications on their capability to contribute to future warfighting requirements.					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Decrease from FY 2021 to FY 2022 is due to discontinuing the Resource Allocation Model analytic decision support.					
Accomplishments/Planned Programs Subtotals	0.863	0.025	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605152N / <i>Studies & Analysis Supt - Navy</i>	Project (Number/Name) 2092 / <i>Naval Warfare Studies</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
<u>Remarks</u>		
D. Acquisition Strategy Not applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605152N / Studies & Analysis Supt - Navy				Project (Number/Name) 2097 / Manpower Personnel & Training			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2097: Manpower Personnel & Training	0.000	0.511	0.501	0.506	-	0.506	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Chief of Naval Personnel has a continuing need for studies and analysis of Manpower and Personnel (M&P) policies and programs and critical M&P issues that have Navy-wide implications. This project provides an essential management tool to: (a) assess the effectiveness of existing M&P policies and programs; (b) identify needs for new policies and programs; (c) determine the required manpower and training mix relative to changing demographic, societal and legislative/regulatory actions, and to evolving strategic and geopolitical factors; (d) study the impact of M&P programs on Navy accession, attrition, retention, and performance; and, (e) to develop, validate and/or refine a broad range of M&P forecasting models. The program permits Navy to more effectively utilize Research and Development expertise to respond to emergent M&P issues on a continuing basis. This program is funded under RDT&E operational systems development because it encompasses engineering and development of new end-items prior to production approval decision.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Manpower Personnel & Training	0.511	0.501	0.506	0.000	0.506
Articles:	5	5	5	-	5
Description: The Chief of Naval Personnel has a continuing need for studies and analysis of Manpower and Personnel (M&P) policies and programs and critical M&P issues that have Navy-wide implications. This project provides an essential management tool to: (a) assess the effectiveness of existing M&P policies and programs; (b) identify needs for new policies and programs; (c) determine the required manpower and training mix relative to changing demographic, societal and legislative/regulatory actions, and to evolving strategic and geopolitical factors; (d) study the impact of M&P programs on Navy accession, attrition, retention, and performance; and, (e) to develop, validate and/or refine a broad range of M&P forecasting models. The program permits Navy to more effectively utilize Research and Development expertise to respond to emergent M&P issues on a continuing basis. This program is funded under RDT&E operational systems development because it encompasses engineering and development of new end-items prior to production approval decision.					
FY 2021 Plans: Continue assessing Special and Incentive Pay policies. - Continue assessing Econometric Modeling System and updating elasticity - Continue assessing and evaluating retention, accession and training trade-offs.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605152N / <i>Studies & Analysis Supt - Navy</i>		Project (Number/Name) 2097 / <i>Manpower Personnel & Training</i>		
<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue assessing economic factors and relationships to MPTE business lines ISO forecasting and responses. - Begin assessment of COVID-19 related impacts on recruitment and retention <i>FY 2022 Base Plans:</i> Continue assessing Special and Incentive Pay policies. - Continue assessing Econometric Modeling System and updating elasticity - Continue assessing and evaluating retention, accession and training trade-offs. - Continue assessing economic factors and relationships to MPTE business lines ISO forecasting and responses. - Continue assessment of COVID-19 related impacts on recruitment and retention <i>FY 2022 OCO Plans:</i> N/A <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> The minor increase in funding from FY 2021 to FY 2022 reflects inflation.						
Accomplishments/Planned Programs Subtotals		0.511	0.501	0.506	0.000	0.506
<u>C. Other Program Funding Summary (\$ in Millions)</u>						
N/A						
<u>Remarks</u>						
<u>D. Acquisition Strategy</u>						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605152N / Studies & Analysis Supt - Navy				Project (Number/Name) 3310 / Naval Aviation Developmental Planning			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3310: Naval Aviation Developmental Planning	0.000	2.539	2.563	2.602	-	2.602	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding supports Naval aviation pre-Milestone B developmental activities to include the conduct and integration of systems engineering activities. This project unit provides information, automated tools, and decision aids necessary to perform acquisition planning in support of warfighter capability requirements. This project unit also supports research, development, and analysis efforts to include various studies, joint requirements analysis, and cost analysis in support of systems engineering activities, analyses of alternatives, and development of Capability Evolution Plan. Due to high turnover and end of service life of several Naval aircraft set against increasing threat capabilities, DOD 5000 series mandates documentation of capability requirements and mechanisms to obtain these capabilities. This project unit allows Naval aviation the means to properly identify capability gaps and potential solutions required to maintain maximum warfighting capability realizing (or achieving) reductions to technical risks and overall program costs.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Naval Aviation Developmental Planning	2.539	2.563	2.602	0.000	2.602
Articles:	-	-	-	-	-
FY 2021 Plans: Continue studies for various aircraft with integrated engineering, logistics, and manpower requirements. Meet emergent engineering requirements documentation within the air warfare portfolio. Update decision support toolset to facilitate internal air warfare and program office total life-cycle trades, and reduce long-term costs of data repositories, manpower, and computer programs. Fund total life-cycle analysis modeling environment required for multiple anticipated analyses of alternatives on fighter, adversary, and rotary-wing aircraft to reduce total cost of studies. Analyses are required to meet pre-Milestone B, DOD 5000 series mandated activities, as well as timelines mandated by the Congressional requirements for an Aviation Investment Plan.					
FY 2022 Base Plans: Continue studies for various aircraft with integrated engineering, logistics, and manpower requirements. Meet emergent engineering requirements documentation within the air warfare portfolio. Update decision support toolset to facilitate internal air warfare and program office total life-cycle trades, and reduce long-term costs of data repositories, manpower, and computer programs. Fund total life-cycle analysis modeling environment required for multiple anticipated analyses of alternatives on fighter, adversary, and rotary-wing aircraft to reduce					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605152N / <i>Studies & Analysis Supt - Navy</i>		Project (Number/Name) 3310 / <i>Naval Aviation Developmental Planning</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
total cost of studies. Analyses are required to meet pre-Milestone B, DOD 5000 series mandated activities, as well as timelines mandated by the Congressional requirements for an Aviation Investment Plan.						
<i>FY 2022 OCO Plans:</i> N/A						
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Increase from FY 2021 to FY 2022 reflects inflation and the continuation of analytical studies.						
Accomplishments/Planned Programs Subtotals		2.539	2.563	2.602	0.000	2.602
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	46.185	43.352	38.590	-	38.590	-	-	-	-	-	-
0031: MCOAG	0.000	6.174	5.438	6.124	-	6.124	-	-	-	-	-	-
0148: Center For Naval Analyses (CNA)	0.000	40.011	37.914	32.466	-	32.466	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Department of the Navy's (DON) Studies and Analysis Federally Funded Research and Development Center (DON S&A FFRDC - hereinafter referred to as the FFRDC) provides independent, objective, and expert analyses based on its unique access to sensitive data and hands-on exposure to fleet operations gained through a world-wide field program. The FFRDC's research program is centrally funded by this program element and is primarily concentrated along one Marine Corps category and thirteen Navy categories of study called product areas. These product areas are structured to enhance the FFRDC's focus of research and analysis upon the major present and future needs and issues of the Navy and the Marine Corps. Because of rapid advances in technology, changes in the fleet, the increasing complexity of weapon systems, and reductions in manpower, force structure, budgets, the current security environment, and Department of Defense (DOD) transformation, the Navy and Marine Corps have a greater need for analyses that are sophisticated, relevant, and timely. The FFRDC conducts research and analysis at all security classification levels, to include Sensitive Compartmented Information (SCI) and Special Access Programs (SAP).

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	47.669	43.517	46.289	-	46.289
Current President's Budget	46.185	43.352	38.590	-	38.590
Total Adjustments	-1.484	-0.165	-7.699	-	-7.699
• Congressional General Reductions	-	-0.165			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.484	0.000			
• Program Adjustments	0.000	0.000	-7.085	-	-7.085
• Rate/Misc Adjustments	0.000	0.000	-0.614	-	-0.614

Change Summary Explanation

Funding: \$7.085 million funding reduction in FY22 due to the Department's Manpower restructuring

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses				Project (Number/Name) 0031 / MCOAG			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0031: MCOAG	0.000	6.174	5.438	6.124	-	6.124	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Marine Corps portion of the Department of the Navy's (DoN) Studies and Analysis Federally Funded Research and Development Center (DoN S&A FFRDC - hereinafter referred to as the FFRDC) Research Program, and is managed as an element of the Marine Corps Studies System. This program provides the Marine Corps with independent and objective research and analysis of specific issues/topics appropriately performed by a FFRDC. Marine Corps Division analysts work at the FFRDC's headquarters and, through the FFRDC's Field representative Program serve at commands worldwide, including: Marine Forces Command, Marine Forces Pacific, Marine Special Operations Command, the three Marine Expeditionary Forces, and Marine Aviation Weapons and Tactics Squadron One (MAWTS-1). The FFRDC also assigns analysts to support the Deputy Commandants and their staffs as well as other Marine Corps organizations such as the Marine Corps Warfighting Lab, Marine Corps Systems Command, and the Commander, Marine Forces Reserve.

The program areas are linked to the Marine Corps Advocacy (prepotency), which are: (1) Logistics and Infrastructure; (2) Manpower and Training; (3) Research, Development and Acquisition; (4) Operations and Plans; (5) Programs and Resources; (6) Aviation; (7) Combat Development and Integration; and (8) Intelligence, Surveillance and Reconnaissance. FFRDC Scientific Analyst support provides six scientific analysts for the following six focus areas: Deputy Commandant (DC), Plans, Policies and Operations; DC Aviation; DC Installation and Logistics; DC Programs and Resources; DC Manpower Reserve Affairs; and Director, Manpower Plans (MP) - Manpower and Reserve Affairs (M&RA). The program continues analytical support for field exercises; Ad Hoc and Quick Response study requirements.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Marine Corps Operations and Analysis Group	6.174	5.438	6.124	0.000	6.124
Articles:	-	-	-	-	-
FY 2021 Plans: Initiated: Studies in support of the FY 2021: Marine Corps Studies System Master Plan (MCSSMP) including the following priority areas: applying USMC capabilities today, balancing current demands against future readiness, innovating to enhance Marine Corps warfighting advantages, ways and means for USMC strategy and policy, and operating the Marine Corps more effectively and efficiently. Continue the FY 2019 analytic focus in support of CMC priorities. Enhanced support and increased capacity to address CMC priorities					
FY 2022 Base Plans: In FY22 the FFRDC will provide study and analytical support to critical Combat Development and Integration (CD&I) and Commandant, HQMC priorities in accordance with the FY 2022 Marine Corps Studies System Master Plan (MCSSMP), the Commandant, USMC Strategic Planning Guidance and the Marine Corps Vision and Strategy 2025. Priority areas: applying USMC capabilities today, balancing current demands against future					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses	Project (Number/Name) 0031 / MCOAG			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
sustainable expeditionary readiness, innovating to enhance Marine Corps warfighting advantages, ways and means for USMC strategy and policy, logistical and equipment support evaluation to operate the Marine Corps more effectively and efficiently, and taking care of our Marines and their families. Continue the FY 2021 analytic focus in support of Commandant Marine Corps (CMC) priorities. Enhanced support and increased capacity to address CMC priorities such as: - Force Design efforts for III Marine Expeditionary Forces (MEF) designed to provide stand in force capability to persist, meet and resist adversary weapons systems and facilitate an effective naval campaign - The relative threats posed by our major adversaries (e.g., Russian resurgence, N. African instability, China's One Belt Road Initiative and PRC capabilities and activities) - Prosecuting global campaigns - Interoperable systems equipment maximizing joint and coalition warfare - Warfighting Concepts and Force Development to include Stand in Force, Expeditionary Advanced Base Operations(EABO), Unmanned Systems, and Warfighting Investments and Divestments - Space Domain modeling and improvements - Modernization of Directed Energy, Counter Precision Guided Munitions and Ground Based Air Defense - Integrating information operations into the MAGTF construct both organizationally and to maximize effects on the battlefield - Leveraging autonomy and artificial intelligence to establish and maintain dominance over existing and emerging threats - Using big data/data science/predictive analysis to gain comparative advantage - Leveraging our analytic efforts for the Navy to support USMC priorities FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: No significant change from FY 2021 to FY 2022.						
Accomplishments/Planned Programs Subtotals		6.174	5.438	6.124	0.000	6.124
C. Other Program Funding Summary (\$ in Millions)						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses	Project (Number/Name) 0031 / MCOAG
C. Other Program Funding Summary (\$ in Millions)		
<u>Remarks</u>		
D. Acquisition Strategy		
N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses				Project (Number/Name) 0148 / Center For Naval Analyses (CNA)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0148: Center For Naval Analyses (CNA)	0.000	40.011	37.914	32.466	-	32.466	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program supports the Navy's portion of the Department of the Navy's (DON) Studies and Analysis Federally Funded Research and Development Center (DON S&A FFRDC - hereinafter referred to as the FFRDC) Research Program, which is primarily concentrated along thirteen Navy categories of study called product areas. These product areas include the following: (1) Manpower/Personnel, Medical and Training; (2) Intelligence, Information and Networks; (3) Plans, Policy, and Operations; (4) Infrastructure and Readiness; (5) Resources, Programs, and Assessments; (6) Capability Integration; (7) Research, Development and Acquisition; (8) Navy Field Program; (9) Navy Field Exercise Program; (10) Scientific Analyst Program; (11) Navy Quick Response Projects; (12) Navy General Concept Development and (13) Naval Analyses Initiated Projects. This program provides the Navy with independent and objective research and analysis of specific issues/topics in support of key operational problems; efforts include field support to fleet commanders, scientific analyst support to Deputy Chiefs of Naval Operations (DCNOs) and their staffs, exercise support, and studies and analysis across the full spectrum of Naval Operations. Support has resulted in substantial improvements in force structure, fleet effectiveness, and significant cost avoidance.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: CENTER FOR NAVAL ANALYSES, NAVY	40.011	37.914	32.466	0.000	32.466
Articles:	-	-	-	-	-
Description: Funding in this project supports integrated research for the Department of Navy (DON) and other DOD components across a broad range of issues including the development and evaluation of tactics, operations testing of new systems, assessment of current capabilities, logistics and readiness, work-force management, space and space-related activities, cyber operations, cost and operational program analysis, assessment of advanced technology, force planning, and strategies implications of political-military developments. CNA provides analytic support and conducts individual analytic efforts for a wide range of DoN sponsors including: OPNAV and HQMC, the Navy Secretariat, Type Commanders, the numbered Fleets and Navy/Marine Corps component commanders, Combatant Commands, and SYSCOMs. It often also provides support to the Office of the Secretary of Defense, other military Services and Defense agencies.					
FY 2021 Plans: Perform studies and analysis on critical Navy priorities tied to the NDS.					
FY 2022 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses		Project (Number/Name) 0148 / Center For Naval Analyses (CNA)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>In FY22 CNA will continue providing support on Navy analytic priorities. As the only Navy sponsored FFRDC, CNA will continue to partner in the development of future initiatives, provide on-site analytic support to various organizations, and provide analytical support to selected wargames and exercises; providing detailed analysis of each event to identify areas of improvement for Navy operational procedures and doctrine.</p> <p>CNA's core competencies ensure the DoN can maintain access to analytic support for the following:</p> <ul style="list-style-type: none">- Assisting operating military forces develop or evaluate new tactics; test or employ new equipment, or plan, conduct and learn from real-world operations- Developing, promulgating, evaluating or refining policies, strategies, or doctrine- Assessing the potential utility of new technologies; the relative need for new systems or capabilities, or the cost and consequences of acquiring a particular system or family of systems- Studies or analysis of issues involving workforce management, sustainment, medical, readiness and logistics, and installations and infrastructure- Program planning covering the long-term evolution of missions, the integration or improvement of capabilities; the acquisition of supplies or services; or the size and shape of future forces <p>Over 320 studies conducted in FY 2020. Selected analytic efforts supported include:</p> <ul style="list-style-type: none">- Improving data analytics and performance to plan- Improving readiness management- Understanding great power dynamics- Operating the Navy more efficiently and effectively- Strategic workforce planning- Enabling distributed networked operations- Leveraging autonomy to establish and maintain dominance over emerging threats- Navy strategy and policy- Maintaining maritime superiority today and in the future <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: FY22 decrease is associated with the Department's programmatic decrease for total force manpower restructuring reducing contracted services.</p>						
Accomplishments/Planned Programs Subtotals		40.011	37.914	32.466	0.000	32.466

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605154N / Center For Naval Analyses	Project (Number/Name) 0148 / Center For Naval Analyses (CNA)
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy Date: May 2021

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605285N / Next Generation Fighter
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	7.006	0.000	0.000	-	0.000	-	-	-	-	-	-
2937: Next Generation Fighter	0.000	7.006	0.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The details of program element are classified and are submitted to Congress in the classified budget justification books.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	7.100	0.000	0.000	-	0.000
Current President's Budget	7.006	0.000	0.000	-	0.000
Total Adjustments	-0.094	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.094	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605285N / Next Generation Fighter				Project (Number/Name) 2937 / Next Generation Fighter			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2937: Next Generation Fighter	0.000	7.006	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The details of program element are classified and are submitted to Congress in the classified budget justification books.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Next Generation Air Dominance Analysis Articles: Description: The details of program element are classified and are submitted to Congress in the classified budget justification books. FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A								5.082	0.000	0.000	0.000	0.000
								-	-	-	-	-
Title: NG Advanced Engines Articles: Description: The details of program element are classified and are submitted to Congress in the classified budget justification books. FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A								1.924	0.000	0.000	0.000	0.000
								-	-	-	-	-
Accomplishments/Planned Programs Subtotals								7.006	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605285N / <i>Next Generation Fighter</i>	Project (Number/Name) 2937 / <i>Next Generation Fighter</i>	

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605502N / Small Business Innovative Research							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	526.969	0.000	0.000	-	0.000	-	-	-	-	-	-
1812: NAVAIR SBIR Program	0.000	132.095	0.000	0.000	-	0.000	-	-	-	-	-	-
1813: SPAWAR SBIR Program	0.000	18.186	0.000	0.000	-	0.000	-	-	-	-	-	-
1814: NAVSEA SBIR Program	0.000	123.470	0.000	0.000	-	0.000	-	-	-	-	-	-
1824: USMC SBIR Program	0.000	13.362	0.000	0.000	-	0.000	-	-	-	-	-	-
1862: SSPO SBIR Program	0.000	12.269	0.000	0.000	-	0.000	-	-	-	-	-	-
1863: NAVSUP SBIR Program	0.000	2.450	0.000	0.000	-	0.000	-	-	-	-	-	-
1864: ONR SBIR Program	0.000	116.416	0.000	0.000	-	0.000	-	-	-	-	-	-
1865: SBIR ADMIN - ONR	0.000	7.903	0.000	0.000	-	0.000	-	-	-	-	-	-
2204: Small Business Tech Transfer Program	0.000	40.061	0.000	0.000	-	0.000	-	-	-	-	-	-
2240: SBIR ADMIN - USMC	0.000	0.917	0.000	0.000	-	0.000	-	-	-	-	-	-
2241: SBIR ADMIN - SPAWAR	0.000	1.025	0.000	0.000	-	0.000	-	-	-	-	-	-
2242: SBIR ADMIN - NAVSEA	0.000	10.820	0.000	0.000	-	0.000	-	-	-	-	-	-
2243: SBIR ADMIN - NAVAIR	0.000	8.447	0.000	0.000	-	0.000	-	-	-	-	-	-
2244: SBIR ADMIN - NAVFAC	0.000	0.075	0.000	0.000	-	0.000	-	-	-	-	-	-
2248: SBIR ADMIN - SSPO	0.000	0.842	0.000	0.000	-	0.000	-	-	-	-	-	-
3201: SBIR CRP - NAVAIR	0.000	1.422	0.000	0.000	-	0.000	-	-	-	-	-	-
3202: SBIR CRP - SPAWAR	0.000	0.173	0.000	0.000	-	0.000	-	-	-	-	-	-
3203: SBIR CRP - NAVSEA	0.000	1.346	0.000	0.000	-	0.000	-	-	-	-	-	-
3204: SBIR CRP - USMC	0.000	0.155	0.000	0.000	-	0.000	-	-	-	-	-	-
3205: SBIR CRP - ONR	0.000	1.261	0.000	0.000	-	0.000	-	-	-	-	-	-
3213: NAVAIR STTR Program	0.000	20.003	0.000	0.000	-	0.000	-	-	-	-	-	-
3233: SPAWAR STTR Program	0.000	0.389	0.000	0.000	-	0.000	-	-	-	-	-	-
3235: Marine Corps STTR Program	0.000	0.814	0.000	0.000	-	0.000	-	-	-	-	-	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy										Date: May 2021			
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605502N I Small Business Innovative Research								
3344: SBIR Trial Admin Program	0.000	13.068	0.000	0.000	-	0.000	-	-	-	-	-	-	

A. Mission Description and Budget Item Justification

The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR and .45% for STTR. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Program Change Summary (\$ in Millions)	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	526.969	0.000	0.000	-	0.000
Total Adjustments	526.969	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	526.969	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1812 / <i>NAVAIR SBIR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1812: <i>NAVAIR SBIR Program</i>	0.000	132.095	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR in FY 2020. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NAVAIR SBIR Program	132.095	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	132.095	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1813 / <i>SPAWAR SBIR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1813: SPAWAR SBIR Program	0.000	18.186	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NAVWAR SBIR PROGRAM	18.186	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	18.186	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1814 / NAVSEA SBIR Program			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1814: NAVSEA SBIR Program	0.000	123.470	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR in FY 2020. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NAVSEA SBIR Program	123.470	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	123.470	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1824 / <i>USMC SBIR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1824: <i>USMC SBIR Program</i>	0.000	13.362	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total					
Title: USMC SBIR FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A																
							Articles:					13.362	0.000	0.000	0.000	0.000
												-	-	-	-	-
							Accomplishments/Planned Programs Subtotals					13.362	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1862 / <i>SSPO SBIR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1862: <i>SSPO SBIR Program</i>	0.000	12.269	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: SSPO SBIR	12.269	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	12.269	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1863 / <i>NAVSUP SBIR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1863: <i>NAVSUP SBIR Program</i>	0.000	2.450	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total					
Title: NAVSUP SBIR FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A																
							Articles:					2.450	0.000	0.000	0.000	0.000
												-	-	-	-	-
							Accomplishments/Planned Programs Subtotals					2.450	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1864 / <i>ONR SBIR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1864: <i>ONR SBIR Program</i>	0.000	116.416	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: ONR SBIR	116.416	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	116.416	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 1865 / <i>SBIR ADMIN - ONR</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1865: <i>SBIR ADMIN - ONR</i>	0.000	7.903	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
Small Business Innovation Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Admin	7.903	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	7.903	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021						
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 2204 / <i>Small Business Tech Transfer Program</i>							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost				
2204: <i>Small Business Tech Transfer Program</i>	0.000	40.061	0.000	0.000	-	0.000	-	-	-	-	-	-				
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-						
A. Mission Description and Budget Item Justification The Small Business Technology Transfer (STTR) program requires Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 0.45% for STTR. This funds cooperative R&D between small businesses and research institutions. The program goals are to create vehicles from moving ideas from research institutions to market; enable researchers to pursue commercial application of technologies; and bridge funding gap between basic research and commercial product.																
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total					
Title: STTR program FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A																
							Articles:					40.061	0.000	0.000	0.000	0.000
								-	-	-	-	-				
Accomplishments/Planned Programs Subtotals							40.061	0.000	0.000	0.000	0.000					
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A																

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 2240 / <i>SBIR ADMIN - USMC</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2240: <i>SBIR ADMIN - USMC</i>	0.000	0.917	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Small Business Innovative Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Title: USMC Admin</p> <p align="right">Articles:</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Base Plans: N/A</p> <p>FY 2022 OCO Plans: N/A</p>	0.917	0.000	0.000	0.000	0.000
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	0.917	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 2241 / <i>SBIR ADMIN - SPAWAR</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2241: <i>SBIR ADMIN - SPAWAR</i>	0.000	1.025	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Small Business Innovative Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Title: SPAWAR Admin</p> <p align="right">Articles:</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Base Plans: N/A</p> <p>FY 2022 OCO Plans: N/A</p>	1.025	0.000	0.000	0.000	0.000
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	1.025	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy									Date: May 2021			
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / Small Business Innovative Research				Project (Number/Name) 2242 / SBIR ADMIN - NAVSEA			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2242: SBIR ADMIN - NAVSEA	0.000	10.820	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Small Business Innovative Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)												
Title: Admin 												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 2243 / <i>SBIR ADMIN - NAVAIR</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2243: <i>SBIR ADMIN - NAVAIR</i>	0.000	8.447	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Small Business Innovative Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Title: SBIR Admin - NAVAIR</p> <p align="right">Articles:</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Base Plans: N/A</p> <p>FY 2022 OCO Plans: N/A</p>	8.447	0.000	0.000	0.000	0.000
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	8.447	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 2244 / <i>SBIR ADMIN - NAVFAC</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2244: <i>SBIR ADMIN - NAVFAC</i>	0.000	0.075	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Small Business Innovative Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NAVFAC Admin	0.075	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.075	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 2248 / <i>SBIR ADMIN - SSPO</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2248: <i>SBIR ADMIN - SSPO</i>	0.000	0.842	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Small Business Innovative Research (SBIR) Administration. Manage the program, technical efforts and award contracts related to SBIR.

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<i>Title:</i> SSPO admin <div style="text-align: right; margin-right: 20px;"><i>Articles:</i></div>	0.842	0.000	0.000	0.000	0.000
<i>FY 2021 Plans:</i> N/A <i>FY 2022 Base Plans:</i> N/A <i>FY 2022 OCO Plans:</i> N/A	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	0.842	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3201 / <i>SBIR CRP - NAVAIR</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3201: <i>SBIR CRP - NAVAIR</i>	0.000	1.422	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Section 252 of the 2006 NDAA Public law No. 109-163 allowed up to 1% of the SBIR to be used to fund the administrative costs of the Commercialization Pilot Program (CPP). The pilot program transitioned to the Commercialization Readiness Program (CRP). CRP is part of the SBIR and STTR Reauthorization Act of 2012 (P. L. 112-81, Section 5001).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: SBIR CRP - NAVAIR <div style="text-align: right; margin-right: 20px;">Articles:</div>	1.422	0.000	0.000	0.000	0.000
FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	1.422	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3202 / <i>SBIR CRP - SPAWAR</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3202: <i>SBIR CRP - SPAWAR</i>	0.000	0.173	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Section 252 of the 2006 NDAA Public law No. 109-163 allowed up to 1% of the SBIR to be used to fund the administrative costs of the Commercialization Pilot Program (CPP). The pilot program transitioned to the Commercialization Readiness Program (CRP). CRP is part of the SBIR and STTR Reauthorization Act of 2012 (P. L. 112-81, Section 5001).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: SPAWAR CRP <div style="text-align: right; margin-right: 20px;">Articles:</div> FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A	0.173 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	0.173	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3203 / <i>SBIR CRP - NAVSEA</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3203: <i>SBIR CRP - NAVSEA</i>	0.000	1.346	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Section 252 of the 2006 NDAA Public law No. 109-163 allowed up to 1% of the SBIR to be used to fund the administrative costs of the Commercialization Pilot Program (CPP). The pilot program transitioned to the Commercialization Readiness Program (CRP). CRP is part of the SBIR and STTR Reauthorization Act of 2012 (P. L. 112-81, Section 5001).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NAVSEA CRP	1.346	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.346	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3204 / <i>SBIR CRP - USMC</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3204: <i>SBIR CRP - USMC</i>	0.000	0.155	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Section 252 of the 2006 NDAA Public law No. 109-163 allowed up to 1% of the SBIR to be used to fund the administrative costs of the Commercialization Pilot Program (CPP). The pilot program transitioned to the Commercialization Readiness Program (CRP). CRP is part of the SBIR and STTR Reauthorization Act of 2012 (P. L. 112-81, Section 5001).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: USMC CRP <div style="text-align: right; margin-right: 20px;">Articles:</div> FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A	0.155 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	0.155	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3205 / <i>SBIR CRP - ONR</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3205: <i>SBIR CRP - ONR</i>	0.000	1.261	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 Section 252 of the 2006 NDAA Public law No. 109-163 allowed up to 1% of the SBIR to be used to fund the administrative costs of the Commercialization Pilot Program (CPP). The pilot program transitioned to the Commercialization Readiness Program (CRP). CRP is part of the SBIR and STTR Reauthorization Act of 2012 (P. L. 112-81, Section 5001).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: ONR CRP <div style="text-align: right; margin-right: 20px;">Articles:</div> FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A	1.261 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	1.261	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3213 / <i>NAVAIR STTR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3213: <i>NAVAIR STTR Program</i>	0.000	20.003	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Technology Transfer (STTR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$1,000,000,000 to set aside 0.45% for STTR in FY 2020. This funds cooperative R&D between small businesses and research institutions. The program goals are to create vehicles from moving ideas from research institutions to market; enable researchers to pursue commercial application of technologies; and bridge funding gap between basic research and commercial product.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NAVAIR STTR Program	20.003	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	20.003	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3233 / <i>SPAWAR STTR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3233: SPAWAR STTR Program	0.000	0.389	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification The Small Business Technology Transfer (STTR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$1,000,000,000 to set aside 0.45% for STTR in FY 2020. This funds cooperative R&D between small businesses and research institutions. The program goals are to create vehicles from moving ideas from research institutions to market; enable researchers to pursue commercial application of technologies; and bridge funding gap between basic research and commercial product.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: NAVWAR STTR FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A							0.389	0.000	0.000	0.000	0.000	
							Articles:	-	-	-	-	-
							Accomplishments/Planned Programs Subtotals					
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / <i>Small Business Innovative Research</i>				Project (Number/Name) 3235 / <i>Marine Corps STTR Program</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3235: <i>Marine Corps STTR Program</i>	0.000	0.814	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Small Business Technology Transfer (STTR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$1,000,000,000 to set aside 0.45% for STTR in FY 2020. This funds cooperative R&D between small businesses and research institutions. The program goals are to create vehicles from moving ideas from research institutions to market; enable researchers to pursue commercial application of technologies; and bridge funding gap between basic research and commercial product.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: USMC STTR	0.814	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.814	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605502N / Small Business Innovative Research				Project (Number/Name) 3344 / SBIR Trial Admin Program			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3344: SBIR Trial Admin Program	0.000	13.068	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification The Small Business Innovation Research (SBIR) program requires each Federal agency that has an extramural budget for Research and Development (R&D) in excess of \$100,000,000 to set aside 3.2% for SBIR in FY 2020. This funds R&D at small businesses. The program goals are to stimulate technological innovation; increase small business participation in federally funded R&D; foster participation by minority and disadvantaged firms in technological innovation; and increase private sector commercialization of federal R&D. This project provides funding for the pilot administrative program authorized by the FY2012 National Defense Authorization Act (SEC. 5141. PILOT TO ALLOW FUNDING FOR ADMINISTRATIVE, OVERSIGHT, and CONTRACT PROCESSING COSTS).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: SBIR Trial Admin Program							13.068	0.000	0.000	0.000	0.000	
Articles:							-	-	-	-	-	
FY 2021 Plans: N/A												
FY 2022 Base Plans: N/A												
FY 2022 OCO Plans: N/A												
Accomplishments/Planned Programs Subtotals							13.068	0.000	0.000	0.000	0.000	
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605804N / <i>Technical Information Services</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	1.461	0.928	0.934	-	0.934	-	-	-	-	-	-
0835: <i>Tech Info System</i>	0.000	0.958	0.928	0.934	-	0.934	-	-	-	-	-	-
2296: <i>Federal Lab Consortium</i>	0.000	0.503	0.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Department of the Navy (DON) often funds research and new technologies that have commercial application and payoff. To facilitate the "tactical to practical" transition, the DON Technology Transfer (T2) Program Office produces policy and guidance, products and services to help make Navy-developed technologies available for public use, as appropriate. There are a number of ways in which the actual transfer may take place,. Technology Transfer Offices to enhance U.S. naval forces effectiveness by strategically leveraging industrial and academic research and development partnerships for modernization. These partnerships transition private sector technology into the NRE, and transfer appropriate Navy-developed innovative concepts, inventions, facilities and materiel to the private sector for the purposes of dual-use commercialization, to benefit DoD, the public economy, and academia. (Public Law 96-480, Federal Technology Transfer Act of 1986.) This program also provides the Department of the Navy interface to the Office of the Assistant Secretary of Defense for Research and Engineering, and to the Assistant Secretary of Commerce for Technology Policy for matters relating to policy and reporting requirements for technology transfer.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.988	0.932	0.945	-	0.945
Current President's Budget	1.461	0.928	0.934	-	0.934
Total Adjustments	0.473	-0.004	-0.011	-	-0.011
• Congressional General Reductions	-	-0.004			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	0.473	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.011	-	-0.011

Change Summary Explanation

Funding: No significant change

Technical: Not applicable.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605804N / Technical Information Services	
Schedule: Not applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605804N / Technical Information Services				Project (Number/Name) 0835 / Tech Info System			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0835: Tech Info System	0.000	0.958	0.928	0.934	-	0.934	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Department of Navy Technology Transfer (T2) Program Office develops policy, and guidance, products and services to the Naval Research and Development Enterprise's (NR&DE) 51 T2-designated laboratories. These laboratories pursue collaborations and partnerships to enhance warfighter effectiveness, by supporting research and development, test and evaluation, and maintenance and sustainment of improved capabilities for the fleet and force. These partnerships enable private sector technology to enter into the NR&DE, and transfer appropriate Navy-developed innovative concepts, inventions, facilities and materiel to the private sector. In addition to these efforts, a strong ecosystem is created that the DON and DoD can leverage to benefit the warfighter, academia, industry, and U.S. economy. (Public Law 96-480, Federal Technology Transfer Act of 1986). This program also provides the Department of the Navy interface to the Office of the Assistant Secretary of Defense for Research and Engineering, and to the Assistant Secretary of Commerce for Technology Policy for matters relating to policy and reporting requirements for technology transfer.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: DON Technology Transfer							0.958	0.928	0.934	0.000	0.934	
							-	-	-	-	-	
Description: DOD Technology Transfer (T2) Program Office is responsible for Technology Transfer policy updates, administration, and oversight as delegated by the Secretary of the Navy (SECNAV). The T2 Program Office is also responsible for programmatic and financial management, setting requirements for and administering professional training, opportunity marketing, setting T2 laboratory designation authority, pilot program administration T2 records management, review, reporting, and storage. This program also provides the Department of the Navy interface to the Office of the Assistant Secretary of Defense for Research and Engineering, and to the Assistant Secretary of Commerce for Technology Policy for matters relating to policy and reporting requirements for technology transfer.												
FY 2021 Plans: To enhance transactional efficiency between the Navy laboratories and industry and academic collaborators, the Navy Technology Transfer (T2) Program Office will continue to revise and update Technology Transfer mechanisms including Cooperative R&D Development Agreements (CRADAs), Partnership Intermediary Agreement (PIA) templates, the Navy Defense Technology Transfer Information System (NDTTIS) database,												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605804N / Technical Information Services	Project (Number/Name) 0835 / Tech Info System				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
online training, Technology Transfer Handbook, Licensing Handbook, and Policy Guidance. It will also continue to execute at least two new pilot programs to embolden innovative T2 efforts Navy Office of Research and Technology Application (ORTA) activities across laboratories and commercialize Navy laboratory-developed technologies. Additionally the T2 Program Office will continue to raise the visibility of Navy technologies through enhancing and updating publications, videos, website/social media, marketing and outreach to capitalize on the Navy laboratory-developed innovations and systematically drive economic growth in the industrial base, create new services and products and amplify an inclusive technology based economic development.							
In order to deliver solutions and capabilities to the acquisition workforce in support of the warfighter, the Navy T2 Program Office will continue to enhance and maintain the NDTTIS database to leverage the value/impact of CRADAs. The Navy-wide T2 Innovation Discovery/Intellectual Property Mining Program will continue to be expanded and enhanced to identify, license and transition more patentable inventions that provide solutions to acquisition and commercial industry technological challenges that can benefit the warfighter and society. The Program Office will continue to lead and participate in national and regional technology transfer, SBIR/ STTR, industrial, and academic engagement events to optimize the marketing and outreach of Navy-developed inventions and expand on collaboration opportunities with industry and engage with underserved communities and non-traditional partners to advance commercialization.							
The Navy T2 Program Office will continue to institute customer relationship and transaction management system that harmonizes and streamlines the T2 mechanism collaboration process, consolidates the Navy's intellection capital into a single structure through a centrally managed portfolio that will include a marketing analysis component, provide for external and internal stakeholder engagement, licensing and ecosystem landscape analysis to discover and forge opportunities for mutually beneficial T2 commercialization collaborations with academia, economic development agencies and start-up businesses.							
FY 2022 Base Plans: To enhance transactional efficiency between the Navy laboratories and industry and academic collaborators, the Navy Technology Transfer (T2) Program Office will continue to revise and update Technology Transfer agreement templates, the Navy Defense Technology Transfer Information System (NDTTIS) database, Technology Transfer Handbook, web-based training, and policy guidance. It will also continue to execute at least two new pilot projects that encourage innovative application of 2020 NDAA priorities in T2 at laboratories, technical activities, maintenance and sustainment facilities that address employment pipelines, minority engagement, and industrial base resiliency. Additionally the T2 Program Office will continue to raise the visibility							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605804N / <i>Technical Information Services</i>		Project (Number/Name) 0835 / <i>Tech Info System</i>		
<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>of Navy technologies through enhancing and updating publications, videos, website/social media, marketing and outreach to capitalize on Navy and private sector collaborations that simultaneously drive economic growth in the industrial base and create new products and services for the warfighter.</p> <p>The Navy T2 Program Office will continue to champion a customer relationship and transaction management system that harmonizes and streamlines the T2 mechanism collaboration process, consolidates the Navy's intellection capital into a single structure through a centrally managed portfolio that will include a marketing analysis component, provide for external and internal stakeholder engagement, licensing and ecosystem landscape analysis to discover and forge opportunities for mutually beneficial T2 commercialization collaborations with academia, economic development agencies and start-up businesses.</p> <p>Over the years, the number of T2-designated laboratories across the Navy has dramatically increased, as the benefits of technology transfer are embraced by Navy laboratory leadership. For FY22, we anticipate continuing this trend. As the number of labs has increased, there is an increased management burden on the DON T2 Program Office to ensure compliance and program success.</p> <p><i>FY 2022 OCO Plans:</i> N/A</p> <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> There is no significant change between FY 2021 and FY 2022</p>						
Accomplishments/Planned Programs Subtotals		0.958	0.928	0.934	0.000	0.934
<u>C. Other Program Funding Summary (\$ in Millions)</u>						
N/A						
<u>Remarks</u>						
<u>D. Acquisition Strategy</u>						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605804N / <i>Technical Information Services</i>				Project (Number/Name) 2296 / <i>Federal Lab Consortium</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2296: <i>Federal Lab Consortium</i>	0.000	0.503	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 The Federal Laboratory Consortium for Technology Transfer (FLC) was established by Congress under the Federal Technology Transfer Act of 1986 (P.L. 99-502, 20 October 1986, as amended). The FLC, in cooperation with federal laboratories and the private sector, provides services to enhance the transfer of federally-developed technology to include activities such as: developing and administering technology transfer training courses and materials; assisting Federal agencies and laboratories in their technology transfer programs; and providing a clearinghouse for technology transfer requests.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Federal Laboratory Consortium for Technology Transfer (FLC)	0.503	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.503	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
 N/A

Remarks

D. Acquisition Strategy
 N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605853N / <i>Management, Technical & Intl Supt</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	112.085	103.987	93.966	-	93.966	-	-	-	-	-	-
0149: <i>International Coop RDT&E</i>	0.000	3.221	3.511	3.001	-	3.001	-	-	-	-	-	-
1767: <i>Naval War Col Strategic Studies Supt</i>	0.000	6.190	5.765	5.785	-	5.785	-	-	-	-	-	-
2098: <i>Navy Postgraduate School (NPS) Studies Support</i>	0.000	10.782	11.467	11.553	-	11.553	-	-	-	-	-	-
2221: <i>JT Mission Assessment Studies</i>	0.000	26.402	22.333	22.173	-	22.173	-	-	-	-	-	-
3017: <i>Enterprise Information Systems</i>	0.000	0.904	0.950	0.969	-	0.969	-	-	-	-	-	-
3027: <i>Defense Critical Infrastructure Program</i>	0.000	7.440	5.746	7.450	-	7.450	-	-	-	-	-	-
3312: <i>MTMD-Maritime Theater Missile Defense Forum</i>	0.000	10.186	16.179	11.857	-	11.857	-	-	-	-	-	-
3330: <i>Naval Research Laboratory (NRL) Facilities Modernization</i>	0.000	18.455	16.370	17.144	-	17.144	-	-	-	-	-	-
3363: <i>PACOM Initiative</i>	0.000	14.025	11.666	14.034	-	14.034	-	-	-	-	-	-
9999: <i>Congressional Add</i>	0.000	14.480	10.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

International Cooperative RDT&E: provide program management, execution, and support to implement a broad range of cooperative Naval Research and Development, Test and Evaluation initiatives to improve coalition interoperability, harmonize US Navy requirements with allied and friendly nations, and identify cooperative international opportunities, and improve coalition interoperability. In addition, it develops coherent approaches, coordinating with partner nations, to sea-based missile defense, command, control, communications, computers and intelligence (C4I), and cooperative acquisition programs while also identifying technology to support the Global Maritime Partnership initiative.

Naval War College Strategic Studies Support:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605853N / <i>Management, Technical & Intl Supt</i>
<p>Provides research, analysis and gaming activities which serve as a focal point, stimulus, and major source of strategic and operational thought within the Navy, joint and interagency communities. These efforts generate strategic and operational alternatives, quantitative analysis, war gaming and political military assessments, and provide recommendations regarding the formulation and execution of maritime options. The War Gaming Department plans, designs, executes, analyzes and reports on the Navy's Title 10 war games. These war games provide analytical input to the Navy's Strategic Plan, assessments of future concepts, and recommendations to the Navy's Quadrennial Defense Review, force design, and strategy process. The War Gaming Department also designs, executes and analyzes war games for theater security cooperation plans and operational war fighting issues.</p> <p>Assessment Program:</p> <p>The Navy Assessment Program provides capability-based planning assessment for Joint Capabilities Integration and Development System (JCIDS), conducts analysis to affect war fighting capability trades and enterprise resources, identifies needs, gaps, and overlaps, and assesses alternative solutions to Joint needs. The program supports both the development and use of modeling, simulation and analytically-based warfare and provides business analyses and analytic tools that provide the basis for decision making with respect to concepts of operations (CONOPS), Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Systems (Information Dominance); warfare systems (Sea Strike, Sea Shield, and Sea Basing) and analytical underpinnings/basis for programmatic decisions of the Navy's top leadership regarding their architectures, force structure, and the Navy's core "organize, train, and equip mission" (the warfare and provider Enterprises). The program provides overarching Planning, Programming, Budgeting and Execution System (PPBES) analyses and guidance for PPBES which provides gap analysis and investment strategy and total obligation authority allocation. It provides independent capability analysis and assists in structuring follow-on Navy analyses. The program coordinates Navy's position for the enhanced planning process and conducts net assessments. It serves as the lead campaign analysis to approve Navy warfare and support requirements. The program supports "A Cooperative Strategy for 21st Century Seapower 21" as modified by the Maritime Strategy which charts a course for the Navy, Coast Guard and Marine Corps to work collectively with each other and international partners to prevent crises from occurring or reacting quickly should one occur to avoid negative impact to the United States. It serves as an independent assessor providing a broad-view perspective across the Navy staff apart from resource sponsors, with an integrated look at both war fighting and war fighting support programs. The program supports the world class modeling efforts to attain a level of Modeling and Simulation (M&S) capability that is world class and establishes the Navy as a leader in the Department of Defense (DoD) M&S community. It provides Navy alternatives in assessing the implications embedded within resource decisions in a quantified context of costs versus capability versus risk. The program provides independent analytic support to Navy leadership in conjunction with various executive level decision forums. It develops tools and analytical methodologies that assist in evaluating Navy programs and provides technical leadership for the analysis functional area of Naval Modeling and Simulation.</p> <p>Operations Integration Group: Classified</p> <p>Naval Research Laboratory (NRL)Facilities Modernization: This program has been established to provide a systematic and planned approach to improve vital in-house science and technology (S&T) laboratory facilities which are reaching or have reached critical stages of deterioration. The program includes restoration and modernization (R&M) initiatives for about 350,000 net square feet, where the average age of the buildings is 67 years old.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605853N / <i>Management, Technical & Intl Supt</i>
<p>The Joint Information Environment (JIE) initiative provides the supporting IT capability framework comprised of shared information technology infrastructure, enterprise services, interoperability with coalition partners and a single security architecture that enables mission commanders to execute mission partnered operations. JIE provides the U.S. configuration controls necessary for enterprise capabilities. By utilizing a U.S enterprise-wide secure Identity and Access Management system, JIE ensures that authorized users at the right classification level gain access to only the data and services they are entitled. The continued development and refinement of a Joint Information Environment will provide for a significant improvement in data sharing within, and between, coalition maritime elements.</p> <p>MTMD - Maritime Theater Missile Defense Forum:</p> <p>This project funds participation in Maritime Integrated Air and Missile Defense projects with other nations through the Maritime Missile Defense Projects Framework Memorandum of Understanding of 2004 (as amended 2009, 2015, 2016, and 2020). Known as the Maritime Theater Missile Defense (MTMD) Forum, it promotes interoperability with the Navies of eleven participating nations (Australia, Canada, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, United Kingdom and the United States). This project funds participation in multiple Projects and includes a maritime contribution to the NATO Active Layered Theater Ballistic Missile Defense (ALTBMD) project, now known as NATO Ballistic Missile Defense (BMD). Engineering analysis and recommendations from MTMD activities are provided to European, Pacific and Central Combatant Commands to influence present day operations. Specifically, the MTMD Forum is addressing challenges with "Maritime Allied Air Defense in Support of Ballistic Missile Defense Operations" that face the Combatant Commanders during present day operations. The MTMD Forum is leveraging At-Sea Demonstration (ASD) test events and operational Fleet Exercises to integrate technology with concepts of operations developed within MTMD Forum working groups.</p> <p>The MTMD Forum develops systems and techniques that enhance protection and defense against the proliferation of short, medium and long-range Ballistic Missile (BM) and Advanced Anti-Ship Cruise Missile (ASCM) threats through the development of interoperable sea-based Integrated Air and Missile Defense (IAMD) capability among coalition nations. This includes protection across the full spectrum of these threats through the enhanced utilization of existing sea-based systems to protect against current threats while progressively improving and developing systems and system-of- systems to effectively counter evolving threats.</p> <p>This project supports USN participation in several Maritime IAMD related Project Arrangements and Working Groups including:</p> <ol style="list-style-type: none"> (1) Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) to define and develop architectures as well as to perform engineering to address coalition capability gaps. (2) Modeling & Simulation (M&S) to establish and maintain a maritime coalition M&S testbed and to perform legacy and future systems simulation testing. (3) Coalition Distributed Engineering Plant (CDEP) to establish and maintain a maritime coalition Hardware-in-the-Loop Testbed and to conduct CDEP testing. (4) Open Architecture (OA) to develop Interface Standards and Data Models. (5) Test Planning and Execution (TPEX) to develop Test Plans, oversee exercise participation and conduct post event data analysis and reporting. (6) Operational Requirements (OR) to develop a Coalition Maritime Missile Defense Operational Concept Document and to identify operational constraints and tactical constructs surrounding coalition maritime missile defense activities. (7) Reciprocal Use of Test Facilities agreements with other nations to support Maritime IAMD and MTMD related demonstrations. 		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt				
(8) Tactical Advancement for Next Generation (TANG) to work with our Allies and International Partners using human-centered design methodologies to identify solutions to technology and sailor performance issues that have been cited during previously conducted experiments, exercises, and demonstrations. This process will seek to leverage R&D investments and risk reduction research commercial companies are making today that can provide potential "dual use" technology and process solutions to complex problems.						
Anti-Tamper (AT): The AT program performs as the Navy Technical Process Owner for the Anti-Tamper systems engineering activity that is intended to prevent and/or delay the exploitation of critical technologies in U.S. systems; manages the research, design, development, implementation, and testing of AT measures and coordinates with Department of Defense AT Executive Agent. Starting in FY19, funding for AT is realigned to PE 0605024N Anti-Tamper Technology Support.						
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.						
B. Program Change Summary (\$ in Millions)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget		113.844	94.297	104.904	-	104.904
Current President's Budget		112.085	103.987	93.966	-	93.966
Total Adjustments		-1.759	9.690	-10.938	-	-10.938
• Congressional General Reductions		-	-0.310			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	10.000			
• Congressional Directed Transfers		-	-			
• Reprogrammings		2.150	0.000			
• SBIR/STTR Transfer		-3.909	0.000			
• Program Adjustments		0.000	0.000	-9.487	-	-9.487
• Rate/Misc Adjustments		0.000	0.000	-1.451	-	-1.451
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 9999: Congressional Add						
Congressional Add: Printed Circuit Board Executive Agent						
Congressional Add Subtotals for Project: 9999						
Congressional Add Totals for all Projects						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt	
<p><u>Change Summary Explanation</u></p> <p>The FY2022 funding request was reduced by \$6.577 million to account for the availability of prior year execution balances.</p> <p>PRJ 3312 MTMD - Maritime Theater Missile Defense Forum: The reduction from FY 2021 to FY 2022 is due to the transition of the Tactical Advancement for Next Generation (TANG) project to Office of Naval Research (ONR) PE 0603758N Swampworks/TANG to align with more similar projects.</p> <p>PRJ 3330 NRL Facilities Modernization: The increase from FY21 to FY22 is due to support the growing need to revitalize NRL facilities. The need for items such as roof repair, transformers and switchgears, and Heating, Ventilating, and Air-Conditioning (HVAC) continues to grow and additional resources were provided to accommodate this need.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / <i>Management, Technical & In tl Supt</i>				Project (Number/Name) 0149 / <i>International Coop RDT&E</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0149: <i>International Coop RDT&E</i>	0.000	3.221	3.511	3.001	-	3.001	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provides funding for program management, execution, and support activities to implement a broad range of cooperative naval Research and Development, Test and Evaluation (RDT&E) initiatives to improve coalition interoperability, harmonize US Navy requirements with allied and friendly nations, and identify cooperative international opportunities. The funding is used to develop approaches to international cooperation consistent with combatant commanders (COCOMs), Chief of Naval Operations (CNO), and Secretary of the Navy (SECNAV) priorities in the maritime domain.

Various cooperative RDT&E programs, projects and exchanges are pursued to identify cooperative acquisition programs, enhance Overseas Contingency Operations (OCO) efforts, fill capability gaps, improve US/coalition interoperability, and standardize defense capabilities with international partners. Such efforts have resulted in:

1. Negotiating and developing approximately 57 international RDT&E Agreements annually with allied and friendly nations;
2. Executing Information Exchange Annexes (IEAs) with foreign partners;
3. Improving IEA information dissemination with allied and friendly countries and within Department of the Navy (DON);
4. Coordinating Navy inputs to the Office of the Under Secretary of Defense (OUSD) Acquisition and Sustainment, (A&S) Foreign Comparative Test (FCT) Program, and Coalition Warfare Program (CWP) as well as the DON Technology Transfer Security Assistance Review Boards (TTSARB).
5. Representing the U.S. Navy in Office of the Secretary of Defense (OSD) directed Armaments Cooperation Forums, including the Conference of North Atlantic Treaty Organization (NATO) Armaments Directors' groups (NATO Naval Armaments Group (NNAG)), and Senior National Representative (SNR);
6. Funding of various international RDT&E support databases including Technical Project Officer (TPO), International Agreement Generators, Information/Data Exchange Agreements, and Project Agreements/Memorandums of Understanding;
7. Funding for Engineering and Scientist Exchange Program (ESEP).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: International Coop RDT&E	3.221	3.511	3.001	0.000	3.001
Articles:	-	-	-	-	-
FY 2021 Plans: -Continue all efforts from prior Fiscal Years (FYs). -Continue and increase support for an international Theater Advanced Submarine Warfare (ASW) and unmanned maritime systems forums with foreign partners, including expansion of international participation in technical discussions.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 0149 / International Coop RDT&E				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>-Continue execution and support in placement of U.S. Navy and partner nation engineers and scientists under OSD's Engineer and Scientist Exchange Program (ESEP), with a focused increase (~4-5 additional/year) on ESEP placements.</p> <p>-Continue execution of approximately 150 Information Exchange Agreements/Data Exchange Annexes (IEAs/DEAs) with more than 30 countries.</p> <p>-Continue to coordinate U.S. Navy participation in the Office of the Undersecretary of Defense for Acquisition and Sustainment (OUSD (A&S)) Coalition Warfare Program (CWP) selection processes to meet emerging military capability requirements.</p> <p>-Support U.S.-India Defense Technology and Trade Initiative Working Groups, including the Joint Working Group on Aircraft Carrier Technology Cooperation (JWGACTC), the Jet Engine Technology Joint Working Group (JETJWG), and the Joint Working Group on Naval Systems (JWGNS).</p> <p>-Support U.S.-India Defense Technology and Trade Initiative Information Exchange and Terms of Reference (TOR) exchanges to promote cooperative opportunity development.</p> <p>-Continue to support NATO Naval Armaments Group (NNAG) and Five Power Groups on cooperative programs.</p> <p>-Provide contract support for Senior National Representative (SNR) and Navy International Programs Office for international outreach, development, and administrative activities.</p> <p>FY 2022 Base Plans:</p> <p>-Continue all efforts from prior FYs.</p> <p>-Continue and increase support for an international Theater ASW and unmanned maritime systems forums with foreign partners, including expansion of international participation in technical discussions.</p> <p>-Continue execution and support in placement of U.S. Navy and partner nation engineers and scientists under OSD's Engineer and Scientist Exchange Program (ESEP), with a focused increase (~4-5 additional/year) on ESEP placements.</p> <p>-Continue execution of approximately 150 Information Exchange Agreements/Data Exchange Agreements (IEA/DEA) with more than 30 countries.</p> <p>-Continue to coordinate U.S. Navy participation in OUSD (A&S) Coalition Warfare Program (CWP) selection processes to meet emerging military capability requirements.</p> <p>-Support U.S.-India Defense Technology and Trade Initiative Working Groups, including the Joint Working Group on Aircraft Carrier Technology Cooperation (JWGACTC), the Jet Engine Technology Joint Working Group (JETJWG), and the Joint Working Group on Naval Systems (JWGNS).</p> <p>-Support U.S.-India Defense Technology and Trade Initiative Information Exchange and Terms of Reference (TOR) exchanges to promote cooperative opportunity development.</p>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt		Project (Number/Name) 0149 / International Coop RDT&E		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
-Continue to support NATO Naval Armaments Group (NNAG) and Five Power Groups on cooperative programs. -Provide contract support for Senior National Representative (SNR) and Navy International Programs Office for international outreach, development, and administrative activities. -Provide travel support for SNR participation in Senior Naval National Representative (SNNR) meetings with key foreign partners, and for select NATO meetings in support of CNO priorities. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: The funding decrease of -\$0.510M is due to reduced support for the Engineer and Scientist Exchange Program (ESEP), information exchange / data collection workshops, as well as travel in order to maintain support for higher priority efforts.						
Accomplishments/Planned Programs Subtotals		3.221	3.511	3.001	0.000	3.001
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 1767 / Naval War Col Strategic Studies Supt			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1767: Naval War Col Strategic Studies Supt	0.000	6.190	5.765	5.785	-	5.785	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Naval War College (NWC) research, analysis and gaming activities serve as a focal point, stimulus, and major source of strategic and operational thought within the Navy, Joint and Interagency communities. These efforts generate strategic and operational alternatives, tactical imperatives, quantitative analysis, war gaming, political-military assessments, and provide recommendations to the Chief of Naval Operations (CNO), Fleet Commanders and numbered Fleet Commanders regarding the formulation and execution of maritime options for the President of the United States.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: Strategic Studies							0.714	0.728	0.729	0.000	0.729	
Articles:							-	-	-	-	-	
Description: Naval War College (NWC) conducts research in strategic studies in response to tasking from the Secretary of the Navy (SECNAV), Chief of Naval Operation (CNO), Fleet Commanders, numbered Fleet Commanders, and Combatant Commanders. NWC research includes strategic documents produced by its Chinese Maritime Studies Institute (CMSI), Russia Maritime Studies Institute (RMSI), Center for Cyber Conflict Studies (C3S), and Institute for Future Warfare Studies (IFWS).												
FY 2021 Plans:												
- Conduct research and analysis projects and provide supporting events for OPNAV, the numbered Fleets, Navy Component Commanders, and Combatant Commanders.												
- Continue to support OPNAV Staff on tasked research projects.												
- Conduct research into Cyber, Chinese, Russian, and Future maritime capabilities and affairs to enhance understanding of global developments and provide studies and advice for CNO and Fleet.												
- Continue research on cyber capabilities, focusing on deterrence.												
- Continue Mahan Program research on deterrence capabilities with increased focus on Navy contribution to national nuclear deterrence missions and future Navy capabilities.												
FY 2022 Base Plans:												
- Conduct research and analysis projects and provide supporting events for OPNAV, the numbered Fleets, Navy Component Commanders, and Combatant Commanders.												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt		Project (Number/Name) 1767 / Naval War Col Strategic Studies Supt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Continue to support OPNAV Staff on tasked research projects.</div> <div>- Conduct research into Cyber, Chinese, Russian, and Future maritime capabilities and affairs to enhance understanding of global developments and provide studies and advice for CNO and Fleet.</div> <div>- Continue research on cyber capabilities, focusing on deterrence.</div> <div>- Continue Mahan Program research on deterrence capabilities with increased focus on Navy contribution to national nuclear deterrence missions and future Navy capabilities.</div> <div>FY 2022 OCO Plans:</div> <div>N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement:</div> <div>There is no significant increase from FY 2021 to FY 2022.</div>						
<div>Title: Naval War Gaming Support</div> <div>Articles:</div> <div>Description: Naval War College (NWC) conducts strategic and operational war gaming and research for Office of the Chief of Naval Operations (OPNAV), the numbered Fleets, Fleet Commanders, and the Combatant Commanders. Each year, 45-60 major war games and associated events provide support to efforts that explore and analyze military, political, informational and economic aspects of differing strategic and operational scenarios and tactical imperatives. NWC continues to expand its capability and capacity to execute war games of increased scope, magnitude and complexity.</div> <div>FY 2021 Plans:</div> <div>- Conduct 30-40 major war games and related events in support of OPNAV, the numbered Fleets, and the Combatant Commands.</div> <div>- Conduct 35 events supporting 6-8 Executive Committee and CNO approved war games and Navy Title X war games, directed research, and analysis.</div> <div>- Continue to foster cooperative relationships with international partners through use of war gaming, research, analysis and education.</div> <div>- Refine capstone war gaming exercises that support the International Maritime Staff Operators Course.</div> <div>- Execute Fleet Synchronization Conferences.</div>		4.836 -	4.385 -	4.392 -	0.000 -	4.392 -

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Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 1767 / Naval War Col Strategic Studies Supt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Execute capstone war game exercise for the Joint Force Maritime Component Commander (JFMCC) Course. Fleet Synchronization Conferences.</div> <div>- Resource and provision life cycle maintenance requirements for networks, communications, and modeling and simulation capacity.</div> <div>- Resource and provision required manpower and equipment for the High Security Research and Wargaming Facility.</div> <div>FY 2022 Base Plans:</div> <div>- Conduct 30-40 major war games and related events in support of OPNAV, the numbered Fleets, and the Combatant Commands.</div> <div>- Conduct approximately 35 events supporting 6-8 Executive Committee and CNO approved war games and Navy Title X war games, directed research, and analysis.</div> <div>- Continue to foster cooperative relationships with international partners through use of war gaming, research, analysis and education.</div> <div>- Refine capstone war gaming exercises that support the International Maritime Staff Operators Course.</div> <div>- Execute Fleet Synchronization Conferences.</div> <div>- Execute capstone war game exercise for the Joint Force Maritime Component Commander (JFMCC) Course. Fleet Synchronization Conferences.</div> <div>- Resource and provision life cycle maintenance requirements for networks, communications, and modeling and simulation capacity.</div> <div>- Resource and provision required manpower and equipment for the High Security Research and Wargaming Facility.</div> <div>FY 2022 OCO Plans:</div> <div>N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement:</div> <div>There is no significant increase from FY 2021 to FY 2022.</div>						
Title: Warfare Analysis and Research		0.555	0.566	0.577	0.000	0.577
Articles:		-	-	-	-	-
Description: Naval War College (NWC) supports senior decision-makers from the Department of Defense, Department of the Navy, the numbered Fleets, Fleet Commanders and Combatant Commanders in reaching						

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Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 1767 / Naval War Col Strategic Studies Supt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
well-informed, objective decisions on strategic, operational and programmatic issues through collaborative research which integrates traditional research and analysis with advanced decision support tools.						
FY 2021 Plans: - Continue conducting major decision events in support of OPNAV, the numbered Fleets, Fleet Commanders, and the Combatant Commanders. - Continue warfighting analysis requirements for numbered Fleet commanders. - Continue analytical research on key strategic and operational challenges such as maritime ballistic missile defense, proliferation security initiative, global maritime security, maritime situational awareness, maritime operations headquarters, interconnectivity, and multi-service force deployment. - Continue evaluation of concepts and decision events in conjunction with war gaming center. - Continue research targeted at the strategic and policy level decision making within China and Russia. - Continue providing direct support to NWC student research groups and war gaming. - Execute approximately 20 major decision events in support of these efforts.						
FY 2022 Base Plans: - Continue conducting major decision events in support of OPNAV, the numbered Fleets, Fleet Commanders, and the Combatant Commanders. - Continue warfighting analysis requirements for numbered Fleet commanders. - Continue analytical research on key strategic and operational challenges such as maritime ballistic missile defense, proliferation security initiative, global maritime security, maritime situational awareness, maritime operations headquarters, interconnectivity, and multi-service force deployment. - Continue evaluation of concepts and decision events in conjunction with war gaming center. - Continue research targeted at the strategic and policy level decision making within China and Russia. - Continue providing direct support to NWC student research groups and war gaming. - Execute approximately 20 major decision events in support of these efforts.						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: There is no significant increase from FY 2021 to FY 2022.						
Title: NWC Student Research Projects		0.085	0.086	0.087	0.000	0.087
Articles:		-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 1767 / Naval War Col Strategic Studies Supt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Description: Selected top performing Naval War College (NWC) students to conduct focused research and analysis of current and future strategic and operational challenges and tactical imperatives. These students are organized under the supervision of the Mahan Scholars Program and the Halsey Group Program.</p> <p>FY 2021 Plans:</p> <p>- Conduct focused research, analysis and war gaming of current and future strategic/operational challenges and tactical imperatives by the Halsey, Gravely and Holloway Group Programs and Mahan Scholars.</p> <p>- Research groups continue to conduct focused research, analysis and free-play war gaming of current and future operational challenges and tactical imperatives arising from regional threats, homeland defense and access denial efforts at the high end of the conflict spectrum in the Pacific, European Command (EUCOM), Central Command (CENTCOM) and Northern Command (NORTHCOM) area of responsibility (AOR). Research and analysis efforts continue in those areas above, and will be expanded to include a detailed focus on counter-targeting, operational deception, and countering information denial and missile defense at the theater joint operational level.</p> <p>FY 2022 Base Plans:</p> <p>Conduct focused research, analysis and war gaming of current and future strategic/operational challenges and tactical imperatives by the Halsey, Gravely and Holloway Group Programs and Mahan Scholars.</p> <p>- Research groups continue to conduct focused research, analysis and free-play war gaming of current and future operational challenges and tactical imperatives arising from regional threats, homeland defense and access denial efforts at the high end of the conflict spectrum in the Pacific, European Command (EUCOM), Central Command (CENTCOM) and Northern Command (NORTHCOM) area of responsibility (AOR). Research and analysis efforts continue in those areas above, and will be expanded to include a detailed focus on counter-targeting, operational deception, and countering information denial and missile defense at the theater joint operational level.</p> <p>FY 2022 OCO Plans:</p> <p>N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement:</p> <p>There is no significant increase from FY 2021 to FY 2022.</p>						
Accomplishments/Planned Programs Subtotals		6.190	5.765	5.785	0.000	5.785

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt	Project (Number/Name) 1767 / Naval War Col Strategic Studies Supt
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 2098 / Navy Postgraduate School (NPS) Studies Support			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2098: Navy Postgraduate School (NPS) Studies Support	0.000	10.782	11.467	11.553	-	11.553	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Navy Postgraduate School (NPS) research and analysis activities serve as a focal point, stimulus, and major source of strategic, tactical and operational thought within the Navy communities. These efforts generate strategic and operational alternatives, tactical imperatives, quantitative analyses, technical developments and assessments, and political-military assessments. Also, provide recommendations to the Chief of Naval Operations (CNO), Fleet Commanders and numbered Fleet Commanders regarding the formulation and execution of maritime options for the President of the United States. Research will be conducted that will enhance graduate education for Naval Officers and potentially provide students with areas of studies for theses and faculty projects. These research activities also serve as a means for OPNAV Resource Sponsors and Major Commands to have analysis and decision support research conducted in the uses of the applied, soft, and hard sciences in solving diverse and complex resource allocation and strategic issues facing the Navy today and envisioned in the future.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Faculty and Student Studies, Analysis and Research	10.782	11.467	11.553	0.000	11.553
Articles:	-	-	-	-	-
Description: Navy Postgraduate School (NPS) research and analysis activities serve as a focal point, stimulus, and major source of strategic, tactical and operational alternatives, tactical imperatives, quantitative analyses, technical developments and assessments, and political-military assessments. Also, provide recommendations to the Chief of Naval Operations (CNO), Fleet Commanders and numbered Fleet Commanders regarding the formulation and execution of maritime options for the President of the United States. Research will be conducted to support graduate students theses determination and completion as part of Faculty projects. These research activities also serve as a means for OPNAV Resource Sponsors and Major Commands to have analysis and decision support research conducted in the uses of the applied, soft, and hard sciences in solving diverse and complex resource allocation and strategic issues facing the Navy today and envisioned in the future.					
FY 2021 Plans: Continue Studies planned in the following areas: <ul style="list-style-type: none"> - 1 in the area of Applied Mathematics - 15 in the area of Executive Education 					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 2098 / Navy Postgraduate School (NPS) Studies Support				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- 24 in the area of Computer Science</div> <div>- 97 in the area of Defense Analysis</div> <div>- 7 in the area of Electrical and Computer Engineering</div> <div>- 14 in the area of Energy Academic Group</div> <div>- 76 in the area of Business & Public Policy</div> <div>- 112 in the area of Information Sciences</div> <div>- 31 in the area of Information Sciences and Modeling, Virtual Environments and Simulation (MOVES)</div> <div>- 25 in the area of Mechanical and Aerospace Engineering</div> <div>- 10 in the area of Meteorology</div> <div>- 20 in the area of National Security Affairs</div> <div>- 12 in the area of Oceanography</div> <div>- 276 in the area of Operations Research</div> <div>- 32 in the area of Physics</div> <div>- 3 in the area of Space Systems</div> <div>- 138 in the area of Systems Engineering</div> <div>FY 2022 Base Plans:</div> <div>Continue Studies planned in the following areas:</div> <div>- 1 in the area of Applied Mathematics</div> <div>- 15 in the area of Executive Education</div> <div>- 24 in the area of Computer Science</div> <div>- 97 in the area of Defense Analysis</div> <div>- 7 in the area of Electrical and Computer Engineering</div> <div>- 14 in the area of Energy Academic Group</div> <div>- 76 in the area of Business & Public Policy</div> <div>- 112 in the area of Information Sciences</div> <div>- 31 in the area of Information Sciences and Modeling, Virtual Environments and Simulation (MOVES)</div> <div>- 25 in the area of Mechanical and Aerospace Engineering</div> <div>- 10 in the area of Meteorology</div> <div>- 20 in the area of National Security Affairs</div> <div>- 12 in the area of Oceanography</div> <div>- 278 in the area of Operations Research</div>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt		Project (Number/Name) 2098 / Navy Postgraduate School (NPS) Studies Support	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO
- 32 in the area of Physics - 3 in the area of Space Systems - 138 in the area of Systems Engineering FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Funding has increased from FY2021 to FY2022 due to additional research projects being executed for Operational Research.					
Accomplishments/Planned Programs Subtotals		10.782	11.467	11.553	0.000
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 2221 / JT Mission Assessment Studies			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2221: JT Mission Assessment Studies	0.000	26.402	22.333	22.173	-	22.173	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This exhibit has been updated to reflect the establishment of the Navy Analytic Office (NAO), which is responsible for the executive oversight of Navy studies and analysis. The NAO was stood up to better align the annual Analytic Agenda to Chief Naval Operation's (CNO) strategic priorities while also providing for study of the more tactical requirements of the Fleet and Navy writ large. The outcome will be synchronized modeling, simulation, assessments, wargames, experiments and exercises providing rich, shared data to support and refine warfighting concepts and to inform budget decisions.

The Navy Annual Studies Program supports the Analytic Agenda by providing both the development and use of modeling, simulation and analytically-based warfare, business analyses and analytic tools that provide the basis for decision making with respect to concepts of operations (CONOPS), Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Systems; warfare systems, and analytical underpinnings/basis for programmatic decisions of the Navy's top leadership regarding their architectures, force structure, and the Navy's core "organize, train, and equip mission" (the warfare and provider Enterprises). The program provides capability-based planning assessment for Joint Capabilities Integration and Development System (JCIDS), conducts analysis to affect warfighting capability trades and enterprise resources, identifies needs, gaps and overlaps, and assesses alternative solutions to Joint needs. The program provides overarching Planning, Programming, Budgeting and Execution System (PPBES) analyses and guidance for PPBES which provides gap analysis and investment strategy and total obligation authority allocation. It provides independent capability analysis and assists in structuring follow-on Navy analyses. The program coordinates Navy's position for the enhanced planning process and conducts net assessments. It serves as the lead campaign analysis to approve Navy warfare and support requirements. The program supports the Maritime Strategy which charts a course for the Navy, Coast Guard and Marine Corps to work collectively with each other and international partners to prevent crises from occurring, or reacting quickly should one occur to avoid negative impact to the United States. The Studies Program provides a broad-view perspective across the Fleet and Navy staff, with an integrated look at both warfighting and warfighting-support programs. It provides Navy alternatives in assessing the implications embedded within resource decisions in a quantified context of costs versus capability versus risk. The program provides independent analytic support to Navy leadership in conjunction with various executive level decision forums.

This project funds concept development engineering, mission effectiveness analysis, and other analyses for formulation of future surface ship and associated platform force structure along with development of the tools to accomplish these efforts. Advanced platform concept studies and systems technology assessments will be conducted as will the development and upgrade of concept design and engineering tools, methods, and criteria. Concept Formulation (CONFORM)/Concept Development and Experimentation (CDE) for ships, boats and unmanned maritime vehicles must be continuously exercised to remain viable. It takes years to train competent practitioners, and knowledge currency is quickly lost without practice. Evolving threats and technologies drive concepts (and the tools, processes, and skills needed to produce them) towards obsolescence without constant attention. Capability Based Assessments and Analysis of Alternatives (AoA) timelines are insufficient for establishing potential material solution cost versus capability relationships without significant concept formulation work beforehand. Active collaboration between the Office of the Chief of Naval Operations requirement sponsors, Program Offices, and the various System Commands (Naval Sea Systems Command, Naval Air

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<p>Systems Command and Space and Naval Warfare Systems Command) engineers is critical for fully exploring the trade space by conducting analysis for affordability, effectiveness and risk. The majority of Total Ownership Cost (TOC) is locked into a design before it is even a program. In the later stages of a program it becomes much more costly to make changes that will significantly impact TOC. Investment up front in concept design can have a high payoff in TOC reduction over the life of a platform class. Outputs include concept costing and performance parameterization for comparative assessment against capability objectives and synthesis to quantify overall (Fleet) capabilities. These products (expressions of cost vs. capability) will serve as the basis of requirements and Joint Capabilities Integration and Development System analysis, define the trade space for AoA efforts, and underpin discussion of force architecture/structure during Quadrennial Defense Review, Long Range Shipbuilding Strategy builds, and Joint Requirements Oversight Council reviews.</p> <p>Capabilities-Based Assessment (CBA) is the Joint Capabilities Integration and Development System (JCIDS) analysis process that includes three phases: Functional Area Analysis (FAA), Functional Needs Analysis (FNA), and Functional Solution Analysis (FSA). The results of the CBA are used to develop a joint capabilities document (based on the FAA and FNA) or initial capabilities document (based on the full analysis). CBA funding provides the resource sponsors the means to develop the analytic underpinning required by Chairman of the Joint Chiefs of Staff Instruction 3170.01G to support the determination of Naval warfighting capabilities and force structure needed to support the Joint Requirements Oversight Council (JROC)/JCIDS requirements validation process and to inform Program Objective Memorandum programming decisions. This analysis includes evaluation of integration and interoperability gaps of both current and future Navy platforms and systems capabilities.</p>							
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Navy Studies & Analysis			20.692	18.547	18.677	0.000	18.677
Articles:			-	-	-	-	-
FY 2021 Plans:							
-To develop, update and maintain detailed level Navy Standard scenarios based on Defense Planning Guidance (DPG).							
-To develop alternative scenarios in support of Defense Review guidance, Joint studies, and Navy resource analyses.							
-To develop, update and maintain analytic baselines for the Major combat operation (MCO) based on DPG.							
-To develop details required to execute analysis of designated Defense Planning Scenarios and their respective Multi-Service Force Deployment Plans.							
-To develop and maintain a framework and common set of processes to ensure that essential elements of warfare analyses, including scenarios, operational concepts, tactics, capabilities of platforms and systems (for Navy, Joint, coalition and threat forces), key assumptions and input data are defined and traceable to government approved/provided source material.							
-To develop scenarios and operational concepts based on government inputs that are sufficiently detailed for use in naval and joint campaign analyses.							
-At the mission level, to script Operational Situations (OPSITS) or Tactical Situations (TACSITS) for use in effectiveness analyses in specific warfare mission areas.							

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO
<ul style="list-style-type: none"> -To provide analytically-based decision recommendations to Chief of Naval Operations (CNO) for both warfighting and support areas. -To develop CNO investment strategy recommendations and assessments for Program Review and Program Objective Memorandum. -To perform rigorous, time critical naval and joint campaign and mission-level analyses, usually based on modeling and simulation that illuminated complex warfare issues which support decision-making in the Planning, Programming, Budgeting and Execution (PPBE) process. -To conduct Intelligence, Surveillance, Reconnaissance (ISR) and Meteorological and oceanographic systems (METOC) assessments to determine the optimal mix of Naval ISR and METOC sensors, platforms, and processing, analysis and fusion disposition to support Major combat operations (MCOs), the Overseas Contingency Operations (OCO), and intelligence preparation of the environment for both MCOs and OCO. -To develop and maintain common baselines from which campaign excursions and mission-level analyses are executed. -To identify, develop and improve data and modeling, and broker agreements upon assumptions, Concepts of Operation (CONOPS), scenarios, and data. -Continue to lead campaign analysis for Office of the Chief of Naval Operations (OPNAV) and lead Navy's participation in Office of the Secretary of Defense (OSD)/Joint Staff analytic agenda, baseline development, and collection of data. -To conduct modeling and simulation support for ongoing OPNAV missile defense analysis requirements. -To provide analytically-based decision recommendations to OPNAV for joint warfighting and support areas. -To develop new analytic models and techniques for informing resource allocation decisions; conduct all campaign and warfare mission-level analyses and develop investment strategies. -To develop and improve the Navy's analysis capabilities which support Joint and Navy analytic agendas and resource-allocation decision making by refining the linkages between cost and performance in performance-modeled programs in support of Navy analysis and assessment. Areas of tool development and improvement included mission and campaign-level warfighting models, active and reserve manpower, afloat and ashore readiness, and medical capabilities. -To focus on integrated analysis capabilities that cut across business and program accounts. Specific efforts address cyber warfare and security, optimizing the training pipeline, integrating ship maintenance and operations price performance models, and improving mission- and campaign-level Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) models and representations. 					
		FY 2022 Total			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO
<p>-To develop medical analysis that links to campaign analysis including movement of injured between care facilities, life-saving treatment of injured and recuperation support of injured to support Navy Medical Program decisions.</p> <p>-To update the high-level readiness model that fully integrates all aspects of warfighting support (operational utilization, training cycles, training centers, depots, etc.) and personnel (recruitment, training, development, deployment, retention, etc.) across the Navy's warfighting platforms (aircraft, ships, submarines, etc.), facilities and personnel development centers.</p> <p>-To conduct ship, boat, and unmanned marine vehicle concept studies in preparation for Capabilities Based Assessments (CBAs) and Analysis of Alternatives (AoAs). Studies will be performed in a continuous manner to support future recapitalization of Surface Combatants, Amphibious Ships, Carriers, Auxiliary Ships and other emerging program requirements.</p> <p>-To collaborate with Warfare Systems design experts to perform continuous Warfare Systems analysis at the ship and fleet level. Warfare Systems effectiveness assessment tools are being continually developed and enhanced as required to address future concepts and to incorporate improvements in information technology systems. Additionally, collaborate with aircraft, Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR), and networks by continuing dialog and collaboration between Naval Sea Systems Command (NAVSEA), Naval Air Systems Command (NAVAIR), and Naval Warfare Systems Command (NAVWAR) systems commands which refines fleet level requirements.</p> <p>-To conduct future force structure concept formulation. Fleet synthesis and analysis will be conducted, which includes capabilities requirements, platform design and cost and quantitative tracking of the long-term evolution of the fleet as new platforms are introduced and old ones are retired. Areas to be examined include interoperability concepts, force architecture impact studies, and operational employment concept studies.</p> <p>FY 2022 Base Plans:</p> <p>-Continue to identify, develop and improve data and modeling, and broker agreements upon assumptions, Concepts of Operation (CONOPS), scenarios, and data.</p> <p>-Continue to lead campaign analysis for Office of the Chief of Naval Operations (OPNAV) and lead Navy's participation in Office of the Secretary of Defense (OSD)/Joint Staff analytic agenda, baseline development, and collection of data.</p> <p>-Continue to conduct modeling and simulation support for ongoing OPNAV missile defense analysis requirements.</p> <p>-Continue to provide analytically-based decision recommendations to OPNAV for joint warfighting and support areas.</p>					

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Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 2221 / JT Mission Assessment Studies				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>-Continue to develop new analytic models and techniques for informing resource allocation decisions; conduct all campaign and warfare mission-level analyses and develop investment strategies.</p> <p>-Continue to develop and improve the Navy's analysis capabilities which support Joint and Navy analytic agendas and resource-allocation decision making by refining the linkages between cost and performance in performance-modeled programs in support of Navy analysis and assessment. Areas of tool development and improvement included mission and campaign-level warfighting models, active and reserve manpower, afloat and ashore readiness, and medical capabilities.</p> <p>-Continue to focus on integrated analysis capabilities that cut across business and program accounts. Specific efforts address cyber warfare and security, optimizing the training pipeline, integrating ship maintenance and operations price performance models, and improving mission- and campaign-level Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) models and representations.</p> <p>-Continue to develop medical analysis that links to campaign analysis including movement of injured between care facilities, life-saving treatment of injured and recuperation support of injured to support Navy Medical Program decisions.</p> <p>-Continue to update the high-level readiness model that fully integrates all aspects of warfighting support (operational utilization, training cycles, training centers, depots, etc.) and personnel (recruitment, training, development, deployment, retention, etc.) across the Navy's warfighting platforms (aircraft, ships, submarines, etc.), facilities and personnel development centers.</p> <p>-Continue to conduct ship, boat, and unmanned marine vehicle concept studies in preparation for Capabilities Based Assessments (CBAs) and Analysis of Alternatives (AoAs). Studies will be performed in a continuous manner to support future recapitalization of Surface Combatants, Amphibious Ships, Carriers, Auxiliary Ships and other emerging program requirements.</p> <p>-Continue to collaborate with Warfare Systems design experts to perform continuous Warfare Systems analysis at the ship and fleet level. Warfare Systems effectiveness assessment tools are being continually developed and enhanced as required to address future concepts and to incorporate improvements in information technology systems. Additionally, collaborate with aircraft, Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR), and networks by continuing dialog and collaboration between Naval Sea Systems Command (NAVSEA), Naval Air Systems Command (NAVAIR), and Naval Warfare Systems Command (NAVWAR) systems commands which refines fleet level requirements.</p> <p>-Continue to conduct future force structure concept formulation. Fleet synthesis and analysis will be conducted, which includes capabilities requirements, platform design and cost and quantitative tracking of the long-term</p>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In t'l Supt		Project (Number/Name) 2221 / JT Mission Assessment Studies		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
evolution of the fleet as new platforms are introduced and old ones are retired. Areas to be examined include interoperability concepts, force architecture impact studies, and operational employment concept studies. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Increase of .13K from FY21 to FY22 are attributed to mission area kill chain solution development and fleet warfighter gap assessments.						
Title: Joint Mission Assessment Studies Articles: Description: Capabilities-Based Assessment (CBA) is the JCIDS analysis process that includes three phases: the Functional Area Analysis (FAA), the Functional Needs Analysis (FNA), and the Functional Solution Analysis (FSA). The results of the CBA are used to develop a joint capabilities document (based on the FAA and FNA) or initial capabilities document (based on the full analysis). CBA funding provides the resource sponsors the means to develop the analytic underpinning required by Chairman of the Joint Chiefs of Staff Instruction 3170.01G to support the determination of Naval war fighting capabilities and force structure needed to support the JROC/ JCIDS requirements validation process and to inform Program Objective Memorandum programming decisions. FY 2021 Plans: CBA such as advanced Naval Warfare fires and Naval aviation integrated analysis to identify future capability requirements. Develop metrics to describe the effectiveness of solutions, and evaluate current and programmed systems ability to meet capability requirements to determine capability gaps. Expand warfighting gap assessments addressing interaction of mission area kill chain platforms, sensors, and weapons in a system-of-system construct. FY 2022 Base Plans: CBA such as advanced Naval Warfare fires and Naval aviation integrated analysis to identify future capability requirements. Develop metrics to describe the effectiveness of solutions, and evaluate current and programmed systems ability to meet capability requirements to determine capability gaps. Expand warfighting gap assessments addressing interaction of mission area kill chain platforms, sensors, and weapons in a system-of-system construct. FY 2022 OCO Plans:		5.710 -	3.786 -	3.496 -	0.000 -	3.496 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 2221 / JT Mission Assessment Studies	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> The decrease from FY21 to FY22 decreases development of mission area kill chain solution development and fleet warfighter gap assessments.					
Accomplishments/Planned Programs Subtotals	26.402	22.333	22.173	0.000	22.173
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt				Project (Number/Name) 3017 / Enterprise Information Systems			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3017: Enterprise Information Systems	0.000	0.904	0.950	0.969	-	0.969	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
This project funds the Office of Naval Research (ONR) Next Generation Enterprise Network (NGEN) Information Technology corporate costs.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Next Generation Enterprise Network (NGEN)	0.904	0.950	0.969	0.000	0.969
Articles:	-	-	-	-	-
Description: This project funds the Office of Naval Research (ONR) Next Generation Enterprise Network (NGEN) Information Technology corporate costs.					
FY 2021 Plans: Funds for NGEN Corporate requirements, such as (obsolescence migration, etc.).					
FY 2022 Base Plans: Continue to support NGEN Corporate requirements, such as (tech refresh, etc.).					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: No significant funding change from FY2021 to FY2022.					
Accomplishments/Planned Programs Subtotals	0.904	0.950	0.969	0.000	0.969

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 3027 / Defense Critical Infrastructure Program			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3027: Defense Critical Infrastructure Program	0.000	7.440	5.746	7.450	-	7.450	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funds received pursuant to the transfer of budget authority from Office of the Secretary of Defense (Policy) Homeland Defense Mission Assurance Directorate will be used for infrastructure analysis, assessment, and research required to support execution of the Defense Critical Infrastructure and Mission Assurance Program (DCIP / MA). Additionally, the transferred budget authority will be used to provide in-depth/cross-cutting analysis to the Mission Assurance (MA)/DCIP programs at the Office of the Secretary of Defense (OSD), Joint Staff, Military Departments/Services, Defense Agencies, and Combatant Commands. NSWCDD-A40 will also perform cyber mission assurance research and provide expertise in infrastructure mitigation techniques and solutions.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Mission Assurance Risk Management System (MARMS) Technical Support	0.530	0.530	0.530	0.000	0.530
Articles:	-	-	-	-	-
<p>Description: Provide capabilities to meet the technical requirements in support of the developmental efforts for the current and future common operating picture for Mission Assurance supporting Joint Staff MARMS development team, program office and A40 mission assurance database organization.</p> <p>The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff provide oversight for funding that will be used for infrastructure analysis, assessment, and research required in support of Mission Assurance and Defense Critical Infrastructure(DCI)programs at the Joint Staff and Office of the Secretary of Defense Policy (OSD)(P).</p> <p>FY 2021 Plans:</p> <p>1 MARMS Technical Working Group (TWG) guidance & requirements traceability tracking and enforcement upon anticipated FY 2020 contract award</p> <p>2 MARMS programmatic acquisition support to Joint Staff and Defense Threat Reduction Agency (DTRA) Program Office based on milestone decision authority phase entry and anticipated system engineering support</p> <p>3 MARMS Architecture tracking and incorporating data registry scheme between existing Joint Staff portals and MARMS developed user interface, the Enterprise Protection Risk Management portal (EPRM)</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3027 / Defense Critical Infrastructure Program		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
4 Database mapping and analysis for MARMS and update of data from emerging analysis and assessment data for initial operational capability for MARMS use and implementation - Data Librarian & Mission Mapping task						
FY 2022 Base Plans: 1 MARMS Technical Working Group (TWG) guidance & requirements traceability tracking and enforcement upon anticipated FY 2021 contract awards 2 MARMS programmatic acquisition support to Joint Staff and Defense Threat Reduction Agency (DTRA) Program Office based on milestone decision authority phase entry and anticipated system engineering support 3 MARMS Architecture tracking and incorporating data registry scheme between existing Joint Staff portals and MARMS developed user interface, the Enterprise Protection Risk Management portal (EPRM) 4 Database development and analysis for MARMS and update of data from emerging analysis and assessment data for initial operational capability for MARMS requirement phases and implementation of each - Data Librarian & Mission Mapping task						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: There is no change from FY2021 to FY2022						
Title: Mission Assurance Assessments (MAA) Support		1.365	0.697	1.333	0.000	1.333
Articles:		-	-	-	-	-
Description: Provide analysis and characterization of Defense Critical Infrastructure through research and study of existing assessment data and incoming assessment data to analyze trends, provide feedback, and significant impacts to defense missions and assets during events, exercises, and planning efforts.						
The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff will provide oversight to A40 for funding that will be used for infrastructure analysis, assessment, and research required in support of Mission Assurance and Defense Critical Infrastructure (DCI) programs at the Joint Staff and OuSD (P).						
FY 2021 Plans: 1 Mission Assurance Trends Analysis Methodology continue refinement of data inputs from latest assessment results						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3027 / Defense Critical Infrastructure Program		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
2 Annual trends analysis on MAA reports conducted to ensure common vulnerabilities are identified, tracked, and enterprise solutions offered to enhance efficient use of limited budgets and funding for risk mitigations 3 Review of Joint Staff quantitative processes in Mission Assurance Assessments to ensure viable and verified risk estimates are defensible within the budget process and gain attention for immediate resolution from cyber and physical threats 4 Incorporate NAVSEA 00I assessment needs into existing Mission Assurance methods and execute two Mission Assurance / Cyber Network Assurance combined assessments at NAVSEA laboratory as pilot and shipyard as initial rollout.						
FY 2022 Base Plans: 1 Mission Assurance Trends Analysis Methodology-continued refinement of data inputs from latest assessment results with centers of excellence inputs 2 Annual trends analysis on MAA reports conducted to ensure common vulnerabilities are identified, tracked, and enterprise solutions offered to enhance efficient use of limited budgets and funding for risk mitigations 3 Review of Joint Staff quantitative processes in Mission Assurance Assessments to ensure viable and verified risk estimates are defensible within the budget process and gain attention for immediate resolution from cyber and physical threats 4 Incorporate NAVSEA 03 assessment needs into existing Mission Assurance methods and execute Mission Assurance / Cyber Assessments at NAVSEA sites and shipyards as directed and coordinated with OPNAV N46, NAVSEA 03 & 00P						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: The funding increase from FY2021 to FY2022 reflects the incorporation of lessons learned from previous year tasking developing methodologies of pilot assessments and increased scheduled assessments and planned team hiring.						
Title: Cyber Mission Assurance (MA)		1.195	0.849	1.227	0.000	1.227
Articles:		-	-	-	-	-
Description: Analysts will investigate cyber impacts to missions and infrastructure associated with DoD assets. This information will be conveyed in assessments, memorandums, and white papers to inform senior leaders and teams about the significance of cyber infrastructure and the interdependencies with physical infrastructure.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 3027 / Defense Critical Infrastructure Program				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff will provide oversight to A40 for funding that will be used for infrastructure analysis, assessment, and research required in support of Mission Assurance and Defense Critical Infrastructure (DCI) programs at the Joint Staff and OUSD (P).							
FY 2021 Plans: 1 Best Practices report for risk reduction to Platform Information Technology - Control Systems (PIT-CS) will be edited to encompass weapons platform IT constructs and other critical infrastructure platforms on which DoD has dependencies 2 Annual Industrial Control Systems (ICS) update to Best Practices Report will be conducted to identify enhanced methods and metrics to monitor progress and accomplishment towards categorizing entire inventory of critical DoD control systems and their known vulnerabilities 3 Research and develop cyber-specific infrastructure assessment methods to complement assessment teams and data incoming from ongoing assessments across DoD and Services, with particular focus on NAVSEA Red Team enhancement 4 Technical Liaison Support to Cyber MA Enterprise will continue to identify paths for engaging Mission Assurance partners on a collaborative tool that identifies cyber mission risks from assets identified as part of ongoing assessment efforts across multiple missions and cyber domains							
FY 2022 Base Plans: 1 Best Practices report for risk reduction to Platform Information Technology - Control Systems (PIT-CS) will be edited to encompass weapons platform IT constructs and other critical infrastructure platforms on which DoD has dependencies 2 Annual Industrial Control Systems (ICS) update to Best Practices Report will be conducted to identify enhanced methods and metrics to monitor progress and accomplishment towards categorizing entire inventory of critical DoD control systems and their known vulnerabilities 3 Research and develop cyber-specific infrastructure assessment methods to complement assessment teams and data incoming from ongoing assessments across DoD and Services, with particular focus on NAVSEA Red Team enhancement							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3027 / Defense Critical Infrastructure Program		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
4 Technical Liaison Support to Cyber Mission Assurance (MA) Enterprise will continue to identify paths for engaging Mission Assurance partners on a collaborative tool that identifies cyber mission risks from assets identified as part of ongoing assessment efforts across multiple missions and cyber domains						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: The funding increase from FY021 to FY2022 is based on the plan to execute Cyber Mission Assurance Assessments using NAVSEA Red Team resources and other cyber protection teams. The increase will additionally fund Mission Relevant Terrain - Cyber analysis and methodology development.						
Title: Defense Critical Electric Infrastructure (DCEI)		0.494	0.494	0.494	0.000	0.494
Articles:		-	-	-	-	-
Description: Provide electric power analysis and characterization of defense installations at the request of senior leaders engaged with energy security and resilience efforts for national security with interagency representatives from industry utilities, DHS, and DoE.						
The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff will provide oversight to A40 for funding that will be used for infrastructure analysis, assessment, and research required in support of Mission Assurance and Defense Critical Infrastructure (DCI) programs at the Joint Staff and OUSD (P).						
FY 2021 Plans:						
1 Update installation peak power methodology and primary Electric Power (EP) infrastructure pathways in support of interagency Fixing America's Surface Transportation (FAST) act collaboration						
2 Update Defense Critical Electric Infrastructure (DCEI) analysis as requested per ongoing interagency collaborations in DoD cluster areas						
3 Analyzing post table top exercise feedback (Constrained Eagle) to enhance leadership understanding of commercial electric power grid dependencies for DoD Missions						
4 Provide recommendations on what DoD processes may be appropriate to use to engage with utilities to discuss analysis findings						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3027 / Defense Critical Infrastructure Program		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
5 Engage with other federal and private industry agencies to deepen understanding of utility operations and grid operations (the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), National Rural Electric Cooperative Association (NRECA), etc.) FY 2022 Base Plans: 1 Update installation peak power methodology and primary Electric Power (EP) infrastructure pathways in support of interagency collaboration on energy resilience efforts 2 Update Defense Critical Electric Infrastructure (DCEI) analysis as requested per ongoing interagency collaborations in DoD cluster areas 3 Continued analysis on priority installations to enhance leadership understanding of commercial electric power grid dependencies for DoD Missions 4 Provide recommendations on what DoD processes may be appropriate to use to engage with utilities to discuss analysis findings and develop energy resilience requirements for DoD installations 5 Engage with other federal and private industry agencies to deepen understanding of utility operations and grid operations (the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), National Rural Electric Cooperative Association (NRECA), etc.) FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: There is no change from FY2021 to FY2022						
Title: Mission Assurance Program Management <div>Articles:</div> Description: Monitor, track and report on all budget related inquiries and task planning and execution for the Mission Assurance / DCIP programs including data calls, weekly budget reports, and deliverables. The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff will provide oversight to A40 for funding that will be used for infrastructure analysis, assessment, and research required in support of Mission Assurance and Defense Critical Infrastructure (DCI) programs at the Joint Staff and OUSD (P). FY 2021 Plans:		0.900 -	0.770 -	0.900 -	0.000 -	0.900 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3027 / Defense Critical Infrastructure Program		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>1 Enhance program management support to OSD and NAVSEA to include financial tracking and updates to support reclama notices or budget execution data calls</p> <p>2 Offer options for enhanced information sharing to MA community and related entities, potentially in support of Combatant Command (CCMD) exercises or real world events that showcases A40 expertise</p> <p>3 Continue to discover ways to save funding via IT footprint consolidation and efficient use of network resources and database files</p> <p>FY 2022 Base Plans:</p> <p>1 Enhance program management support to OSD and NAVSEA to include financial tracking and updates to support reclama notices and budget execution data calls</p> <p>2 Offer options for enhanced information sharing to MA community and related entities, in support of Combatant Command (CCMD) exercises or real world events that showcase A40 expertise</p> <p>3 Continue to discover ways to save funding via IT footprint consolidation and efficient use of network resources and database files</p> <p>4 Enhance A40 center of excellence analysis capabilities with investigations into system engineering and modeling tools and methods across industry and government centers of excellence</p> <p>FY 2022 OCO Plans:</p> <p>N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement:</p> <p>The funding increase from FY2021 to FY2022 reflects increased need to license virtual tools and network resource management of purchased tools and datasets associated with related tasking for Mission Assurance Cyber Assessments, Defense Critical Electric Infrastructure, and Surge Layer Defense efforts currently being planned.</p>						
<p>Title: Defense Critical Infrastructure</p> <p style="text-align: right;">Articles:</p> <p>Description: Provide mission assurance assessment and support for characterization of defense critical infrastructure and supporting links to commercial industry and equipment. Analysis and research will provide details on critical links to defense missions and assets and support risk management decision planning for installations, services, and Combatant Commands (CCMDs).</p> <p>The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff will provide oversight to A40 for funding that will be used for infrastructure analysis, assessment, and</p>		0.600 -	0.396 -	0.600 -	0.000 -	0.600 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 3027 / Defense Critical Infrastructure Program			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
research required in support of Mission Assurance and Defense Critical Infrastructure (DCI) programs at the Joint Staff and OUSD (P).						
FY 2021 Plans:						
1 Maintain Global Mission Assurance Portal (GMAP) portal documentation requirements and continue development of database solution and provide best practices / option in support and coordination with MARMS effort						
2 DCI criticality assessments and nominations will continue to flow in and be reviewed / analyzed for completeness and prioritized for review						
3 Mission Mitigation and Risk Reduction Plan coordination and review of new or existing nominated assets and need for budget prioritization of vulnerability solutions						
4 Risk Management Plan draft summaries will be coordinated, edited, and reviewed for correctness, completeness and identified appropriate vulnerabilities and threats to justify risk management plan efforts cover the issues						
5 Continue nomination package preparation for biannual update and finalization of critical defense assets and infrastructure						
6 Revalidation packages for Defense Critical Assets (DCAs) will be reviewed and nominated based on previous mission plan inputs and current Joint Staff and OSD defense planning guidance updates						
7 Development and support of Defense Industrial Base pilot assessment "Supporting Eagle" will be executed and feedback gained from exercise execution to implement in future policy documents						
FY 2022 Base Plans:						
1 Maintain Global Mission Assurance Portal (GMAP) portal documentation requirements and continue development of database solution and provide best practices / option in support and coordination with MARMS & EPRM efforts						
2 DCI criticality assessments and nominations will continue to flow in and be reviewed / analyzed for completeness and prioritized for review						
3 Mission Mitigation and Risk Reduction Plan coordination and review of new or existing nominated assets and need for budget prioritization of vulnerability solutions						
4 Risk Management Plan draft summaries will be coordinated, edited, and reviewed for correctness, completeness and identified appropriate vulnerabilities and threats to justify risk management plan efforts cover the issues						

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Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3027 / Defense Critical Infrastructure Program		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
5 Continue nomination package preparation for biannual update and finalization of critical defense assets and infrastructure						
6 Revalidation packages for Defense Critical Assets (DCAs) will be reviewed and nominated based on previous mission plan inputs and current Joint Staff and OSD defense planning guidance updates						
7 Development and support of follow - on Surge Layer Defense and National Defense Strategy assessments will be executed and feedback gained to implement findings into exercise execution and implement in future policy documents for technical relevancy						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: Increase from FY2021 to FY2022 due to increased interest and need from senior leader's to develop and enhance assessments on defense critical infrastructure supporting strategic missions and planning						
Title: Defense Critical Mission (DCM)		0.526	0.326	0.503	0.000	0.503
Articles:		-	-	-	-	-
Description: Conduct research and provide expertise on the defense critical missions nominated by the Joint Staff and Mission Assurance community for development of mitigations and solutions to vulnerabilities discovered as part of mission assurance assessment processes. Analysts will provide expertise and knowledge in multiple areas of engineering and infrastructure to provide robust and resilient plans and projects to enhance installation infrastructure and planning to increase successful support of critical missions.						
The Office of the Undersecretary of Defense for Policy (OUSD-P) Mission Assurance Directorate and the Joint Staff will provide oversight to A40 for funding that will be used for infrastructure analysis, assessment, and research required in support of Mission Assurance and Defense Critical Infrastructure (DCI) programs at the Joint Staff and OUSD (P).						
FY 2021 Plans:						
1 Continue update of Mission Maps to maintain awareness of existing and new DCMs and the assets supporting multiple AORs and across mission owners (and de-conflict)						
2 Provide DCM process briefings to MA community to enhance awareness of critical mission assets and their common vulnerabilities within domains and across operational areas to enhance enterprise solutions and identify funding dollars to fix vulnerabilities						

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Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 3027 / Defense Critical Infrastructure Program				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
3 Support Mission Assurance Senior Steering and Executive Steering Group briefings and papers to Joint Staff led initiatives incorporating the DCM concept into doctrine or best practices						
4 Continued update of Defense Critical Mission Methodology Brief to include Plan of Action and Milestones and execute tasks to provide a more holistic concept of mission assurance and protection of assets in support of multiple missions						
FY 2022 Base Plans:						
1 Continue update of Mission Maps to maintain awareness of existing and new DCMs and the assets supporting multiple AORs and across mission owners (and de-conflict)						
2 Provide DCM process briefings to MA community to enhance awareness of critical mission assets and their common vulnerabilities within domains and across operational areas to enhance enterprise solutions and identify funding dollars to fix vulnerabilities						
3 Support Mission Assurance Senior Steering and Executive Steering Group briefings and papers to Joint Staff led initiatives incorporating the DCM concept into doctrine or best practices						
4 Continued update of Defense Critical Mission Methodology Brief to include Plan of Action and Milestones and execute tasks to provide a more holistic concept of mission assurance and protection of assets in support of multiple missions						
FY 2022 OCO Plans:						
N/A						
FY 2021 to FY 2022 Increase/Decrease Statement:						
Increase from FY2021 to FY2022 reflects increased requirements from senior leaders on enhanced risk management and decision making from mission analysis methods and assessments						
Title: Outside the Wire (OTW) Infrastructure Reports		0.620	0.500	0.620	0.000	0.620
Articles:		-	-	-	-	-
Description: Provide infrastructure characterization reports on non-DoD owned supporting infrastructure at DoD installations on the same schedule as the Defense Threat Reduction Agency (DTRA) mission assurance assessments						
FY 2021 Plans:						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Up to 16 OTW reports anticipated to be provided by A40 Dahlgren to Defense Threat Reduction Agency (DTRA) teams ahead of pre-site scheduled visit						
FY 2022 Base Plans: 1-Up to 16 OTW reports anticipated to be provided by A40 Dahlgren to Defense Threat Reduction Agency (DTRA) teams ahead of pre-site scheduled visits 2-Development of upgraded OTW reports to engage assessments on threat and vulnerability integration						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: Funding increase from FY2021 to FY 2022 reflects the increase in the number of reports from this effort supporting outside agency mission assurance and cyber assessments and upgrades to methodology and data / intelligence development.						
Title: MA Advanced Homeland Analysis & Assessment Integration		1.210	1.184	1.243	0.000	1.243
Articles:		-	-	-	-	-
Description: Provide technical assessment support and improve mission assurance implementation to enterprise systems, and provide leadership in support of OSD and NAVSEA efforts between mission assurance, threat intelligence, big data analysis and cybersecurity network programs. This includes identifying and categorizing Mission Relevant Terrain-Cyber (MRT-C) data via Red Team capabilities.						
FY 2021 Plans: Grow team from FY2020 to 3-4 assessments per year on a steady periodic basis through FY2021. Provide cyber and mission assurance analysis and expertise to assets, infrastructure, and networks and provide reporting to senior leadership to mitigate found vulnerabilities; grow local expertise and persistent cyber awareness based on initial assessment team survey						
FY 2022 Base Plans: 1-Sustain team from FY2021 growth to 3-4 assessments per year on a steady periodic basis through FY2022 2-Provide cyber and mission assurance analysis and expertise to assets, infrastructure, and networks for Navy and NAVSEA entities 3-Provide reporting to senior leadership to mitigate found vulnerabilities and develop enterprise solutions 4-Grow local expertise and persistent cyber awareness based on initial assessment team survey						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / <i>Management, Technical & Intl Supt</i>		Project (Number/Name) 3027 / <i>Defense Critical Infrastructure Program</i>		
<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
5-Support NAVSEA Mission Assurance office establishment and provide on-site support to NAVSEA 00P security directorate at Washington Navy Yard						
<i>FY 2022 OCO Plans:</i> N/A						
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Increase from FY2021 to FY2022 due to increased requirements for analysis and support from Navy and DoD red team and cyber mission analysts.						
Accomplishments/Planned Programs Subtotals		7.440	5.746	7.450	0.000	7.450
<u>C. Other Program Funding Summary (\$ in Millions)</u> N/A						
<u>Remarks</u>						
<u>D. Acquisition Strategy</u> N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3312: MTMD-Maritime Theater Missile Defense Forum	0.000	10.186	16.179	11.857	-	11.857	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds participation in Maritime Integrated Air and Missile Defense projects with other nations through the Maritime Missile Defense Projects Framework Memorandum of Understanding of 2004 (as amended 2009, 2015, 2016 and 2020). Known as the Maritime Theater Missile Defense (MTMD) Forum, it promotes interoperability with the Navies of twelve participating nations (Australia, Belgium, Canada, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, United Kingdom and the United States). This project provides direct support to NATO Ballistic Missile Defense (BMD). Engineering analysis and data analytics from MTMD activities are provided to European, Pacific and Central Combatant Commands in direct support of theater priorities. Specifically, the MTMD Forum is addressing challenges with "Maritime Allied Air Defense in Support of Ballistic Missile Defense Operations" that face the Combatant Commanders during present-day operations. The MTMD Forum is leveraging At-Sea Demonstration (ASD) test events and operational Fleet Exercises (Formidable Shield and Pacific Dragon) to integrate technology with concepts of operations developed within MTMD Forum working groups.

The MTMD Forum develops systems and techniques that enhance protection and defense against the proliferation of short, medium and long-range Ballistic Missile (BM) and Advanced Anti-Ship Cruise Missile (ASCM) threats through the development of interoperable sea-based Integrated Air and Missile Defense (IAMD) capability among coalition nations. This includes protection across the full spectrum of these threats through the enhanced utilization of existing sea-based systems to protect against current threats while progressively improving and developing systems and system-of-systems to effectively counter evolving threats.

This project supports USN participation in a Maritime IAMD Project Arrangement focused on:

- (1) Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) to define and develop architectures and perform engineering to address coalition capability gaps.
- (2) Modeling & Simulation (M&S) to establish and maintain a maritime coalition M&S testbed and to perform legacy and future systems simulation testing.
- (3) Hardware-in-the-Loop Testing of Coalition combat systems to assess interoperability within the Coalition Distributed Engineering Plant (CDEP).
- (4) Open Architecture (OA) work to develop Interface Standards and Data Models.
- (5) Test Planning and Execution (TPEX) to develop Test Plans, oversee exercise participation and conduct post event data analysis and reporting.
- (6) Operational Requirements (OR) to develop a Coalition Maritime Missile Defense Operational Concept Document and to identify operational constraints and tactical constructs surrounding coalition maritime missile defense activities.
- (7) Reciprocal Use of Test Facilities agreements with other nations to support Maritime IAMD and MTMD related demonstrations.
- (8) Tactical Advancement for Next Generation (TANG) to work with our Allies and International Partners using human-centered design methodologies to identify solutions to technology and sailor performance issues that have been cited during previously conducted experiments, exercises, and demonstrations. This process will

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intelligence Support		Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum				
seek to leverage R&D investments and risk reduction research commercial companies are making today that can provide potential "dual use" technology and process solutions to complex problems.								
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)				FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: MTMD-Martime Theater Missile Defense Forum Articles: FY 2021 Plans: (1) Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) Working Group will continue engineering analysis of multi-national interoperability gap assessment for the optimal, coalition Target Architecture that provides increased interoperability with a vision towards automation of some command and control functions, utilizing test results from project events and request for information inputs from member nations. BMC4I will evaluate emergent Possible Point Solutions for information, data, and system information and provide recommendations for implementation in correcting coalition interoperability gaps. BMC4I examination of allied capabilities and limitations, and follow-on production of a capabilities and limitations database, is critical to the understanding of compatible link, data, and other coalition systems. BMC4I will develop updates to MTMD Coalition Capabilities and Interoperability (CCI) publications that contribute to alignment of acquisition requirements among the participating nations of the MTMD Forum. (2) Modeling & Simulation (M&S) Working Group will continue analysis of Target Architectures and conduct further assessments in support of providing recommendations to improve information exchange requirements identified by BMC4I and the System Engineering Team (SET). M&S will refresh equipment and software procured in the 2013 timeframe and ensure all associated authorities to operate are in place for continued coalition modeling and simulation. The technical refresh is required in order to maintain compatibility with allied M&S systems. M&S will model future Target Architectures and provide analysis in support of future at-sea demonstrations. The M&S team will continue development of the test bed and add additional computing power to the test environment to provide faster and more powerful analytical capability to the Forum System Engineering Team. The M&S Working Group will continue development of Mission Models in support of capability development to illustrate operational impact of proposed solutions to complex Integrated Air and Missile Defense (IAMD) problems. (3) Coalition Distributed Engineering Plant (CDEP) Working Group will continue to assess interoperability of joint air and land assets in Annual Test Events. The controlled test environment offers greater repeatability than at-sea events. Three additional nations have fielded national Hardware in the Loop (HWIL) capabilities in the last three years, requiring more frequent connection testing by the U.S. CDEP Team. CDEP will work				10.186	16.179	11.857	0.000	11.857
				-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
with BMC4I and Operational Requirements (OR) working groups to update the Coalition Capabilities and Interoperability (CCI) gaps document and develop test plans to assess capabilities suitable for synthetic-based testing. CDEP will prepare for and conduct HWIL tests with allied partners, and will provide assessments and recommendations to improve information exchanges required to conduct effective IAMD operations. CDEP will perform early-look testing that assesses Identification Friend or Foe (IFF) Mode S interoperability between the US and Coalition partners and the impacts to interoperability. CDEP plans to test Link 22 between the US and its Coalition partners to characterize interoperability impacts of this newly implemented Tactical Data Link. CDEP will continue to align with the stated objectives within the MTMD Forum Capability Roadmap. CDEP will continue to operate an HWIL suite that can supplement live testing and facilitate a robust engineering evaluation of integrated air and missile defense performance for coalition interoperability.					
(4) Open Architecture Working Group (OAWG) will model and extend the component software interfaces for additional Force Level Functions (FLFs), including Track Management. The Force Data Model will be extended to support the information exchange of additional FLFs. The Force Level Open Architecture Technical Standard (FLOATS) will be implemented in national Force Threat Evaluation and Weapons Assignment (FTEWA) prototype efforts such as ONR's The Technical Cooperation Program (TTCP). It will also be finalized and exercised via scenarios within the Project's M&S and CDEP environments. In addition to identifying errors and deficiencies in the standard, these exercises and FLOATS implementations will demonstrate various operational methodologies for distributing data within the Force as well as identifying performance parameters. Comments submitted against the standard will be adjudicated and the standard will be updated as required. The OAWG will continue to collaborate with BMC4I, OR, CDEP and the System Experts Meeting (SEM) to ensure these interfaces align with the Target and Reference Architectures as well as selected Possible Point Solutions (PPSs). The OAWG will collaborate with the FTEWA Workshops and Subject Matter Experts (SMEs) to ensure the FLF component interfaces align with FTEWA and operational requirements. The OAWG will monitor the Open Architecture Radar Interface Standard (OARIS) Industry Group and relevant commercial standards as required.					
(5) Test Planning and Execution (TPEX) Working Group will continue preparations for MTMD participation and support for ongoing at-sea test event series. At-Sea Demonstration 21 / Exercise Formidable Shield 2021 (ASD/ FS21) will execute in Q3 of FY21. Data analysis for At Sea Demonstration / Formidable Shield 2021 (ASD/ FS21) will be critical to affirm the interoperability of new capabilities like Link 22, Interrogation Friend or Foe (IFF) Mode 5/S, and Allied Launch on Remote Ballistic Missile Defense functionality. The ASD/FS21 exercise is specified and endorsed by the Joint Chiefs of Staff Joint Exercise Program, and incorporated into the U.S.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>European Command schedule for FY 21 activity. Further, the event is specified and scheduled in NATO's Master Training Exercise Program for FY21 conduct. Live-fire Integrated Air and Missile Defense (IAMD) events are planned to be conducted with MTMD Forum nations bringing ships, aircraft, and ground based sensors. These at-sea demonstrations will include live tracking events and a combination of live and simulated engagements within a fleet exercise, focused on interoperability assessment. Data analysis of the results will be integral to shaping future Formidable Shield exercise objectives. The MTMD Forum Project is the sponsor for supersonic target associated activity and responsible for the integration efforts of ground-launched supersonic targets at the Ministry of Defence Hebrides Range. Planning for At-Sea Demonstrations and follow-on at-sea testing will continue into future years and include ballistic target procurement. The data analysis effort contained within the TPEX line of effort provides the linkage and measures of success between the various MTMD-F supported at sea demonstrations that enabled key policy makers and leaders to understand capability gaps / possible solutions with quantified metrics. Future planning in FY21will include Pacific Dragon 22, and FS-23, which will be risk reduction for future ASD events. Initiation of target developments to support PD 22 and PD 24 as well as FS-23 and ASD/FS-25 will also occur in FY21.</p> <p>(6) Operational Requirements Working Group will continue to provide operator's perspective and recommendations to the engineering and test activity conducted in the other working groups. This critical cooperation with Naval Surface & Mine Warfare Development Command (SMWDC) enables the allied linkage into the established relationship between SMWDC and NAVSEA.</p> <p>(7) Tactical Advancements for the Next Generation (TANG) will lead projects that solve mission focused, human-centered challenges using innovation and systems engineering methods for the Navy, United States Marine Corps (USMC) and International Partners. Planned projects in FY21 include improved approach to the PEO COLUMBIA commitments process; Surface Ship Redesign process for PEO SHIPS; Next Generation Combat Information Center (CIC) concept development for Missile Defense Agency (MDA); NAVSEA Digital Engineering effort; development of USMC Future Vertical Lift design requirements; exploration of Surface Training and Readiness concepts to assess tactical proficiency on surface ships; exploration of the Future Surface Combatant for Royal Canadian Navy via PMS325F and other projects for the Department of the Navy.</p> <p>FY 2022 Base Plans:</p> <p>(1) BMC4I will continue in its mission of engineering analysis of multi-national interoperability gap assessment for the Target Architecture utilizing test results from project events and complete development of the Target Architecture based on additional request for information inputs from member nations. BMC4I will evaluate</p>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt		Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
emergent Possible Point Solutions and provide recommendations for implementation in correcting coalition interoperability gaps. BMC4I examination of allied capabilities and limitations, and follow-on production of a capabilities / limitations database, is critical to the success of future Modeling and Simulation work, Coalition Distributed Engineering Plant experiments, and At-Sea Demonstrations. BMC4I will develop updates to MTMD Coalition Capabilities and Interoperability (CCI) publications that contribute to alignment of requirements among the participating nations of the MTMD-F as well as to future versions of the MTMD Capabilities and Limitations (Caps & Lims) documents.						
(2) M&S will continue in their constant, cyclical work providing analysis of Target Architectures and conduct further assessments in support of creating data and analysis to support recommendations to improve information exchange requirements identified by BMC4I and the System Engineering Team (SET). M&S will continue to ensure all associated authorities to operate are in place for continued coalition modeling and simulation. M&S will ensure all coalition partners in the MTMD Forum who participate in the M&S working group will have online access as required to M&S modeling and simulation equipment to continue to run simulations in support of these MTMD efforts. M&S will model future Target Architectures and provide analysis in support of future at-sea demonstrations. The M&S team will continue development of the test bed and add additional computing power to the test environment to provide faster and more powerful analytical capability to the Forum System Engineering Team in order to provide more timely responses to requests for model/simulation data to support recommendations. The M&S Working Group will continue development of Mission Models in support of capability development to illustrate operational impact of proposed solutions to complex Integrated Air and Missile Defense (IAMD) problems.						
(3) CDEP will continue to assess interoperability of joint air and land assets in Annual Test Event (ATE) consistent with the MTMD Forum Project Management Framework. CDEP will provide technical leadership and expertise to the BMD Integration, FTE2C, IAMD Interoperability/ Common Tactical Picture (CTP), Joint Integration, and Knowledge Management projects in accordance with the MTMD LSE's guidance. CDEP will continue to assess interoperability of joint air and land assets in Annual Test Event (ATE) 2022. The controlled test environment offers greater repeatability than comparable at-sea events. Three additional nations have fielded their national Hardware in the Loop (HWIL) capabilities in the last two years, requiring more frequent connection testing by the U.S. CDEP Team. CDEP will also characterize risks of future at-sea events such as At Sea Demonstration (ASD) 2022 and ASD 2023. CDEP will work with BMC4I and OR working groups to update the Coalition Capabilities and Interoperability (CCI) gaps document and develop test plans to assess capabilities suitable for synthetic-based testing. CDEP will prepare for and conduct hardware-in-the-loop tests						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt	Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base
					FY 2022 OCO
					FY 2022 Total
with allied partners, and will provide assessments and recommendations to improve information exchanges required to conduct at-sea demos or to evaluate performance as an effective and efficient alternative to at-sea events. CDEP will perform early-look testing that assesses Identification Friend or Foe (IFF) Mode S interoperability between the US and Coalition partners and the impacts to interoperability. CDEP will test Link 22 between the US and its Coalition partners to characterize interoperability impacts during future ASD events. CDEP will continue to align with the stated objectives within the MTMD Forum Capability Roadmap. CDEP will utilize results from the Sufficiency Survey to continue to improve a hardware-in-the-loop (HWIL) suite that can supplement live testing and facilitate a robust engineering evaluation of integrated air and missile defense performance for coalition interoperability.					
(4) Open Architecture will model and extend the component software interfaces for additional Force Level Functions (FLFs): Network Management and Planning and Tasking. The Force Data Model will be extended to support the information exchange of additional FLFs. The Force Level Open Architecture Technical Standard (FLOATS) will be implemented in national Force Threat Evaluation and Weapons Assignment (FTEWA) prototype efforts such as ONR's The Technical Cooperation Program (TTCP). It will also be finalized and exercised via scenarios within an M&S and CDEP environment. In addition to identifying errors and deficiencies in the standard, these exercises and FLOATS implementations will demonstrate various operational methodologies for distributing data within the Force as well as identifying performance parameters. Comments submitted against the standard will be adjudicated and the standard will be updated as required. The OAWG will continue to collaborate with BMC4I, OR, CDEP and the System Experts Meeting (SEM) to ensure these interfaces align with the Target and Reference Architectures as well as selected Possible Point Solutions (PPSs). The OAWG will collaborate with the FTEWA Workshops and Subject Matter Experts (SMEs) to ensure the FLF component interfaces align with FTEWA and operational requirements. The OAWG will monitor the OARIS Industry Group and relevant commercial standards as required.					
(5) TPEX will continue preparations for MTMD participation and support for ongoing at-sea test event series. Pacific Dragon (PD) 2022 exercise will execute in Q4 of FY22. The exercise is specified and endorsed by COMPACFLT. Target development initiated in FY21 will continue to support the live-fire objectives for PD 22 and future PD exercises. During PD, live-fire Integrated Air and Missile Defense (IAMD) events are planned to be conducted with MTMD Forum nations bringing ships, aircraft, and ground based sensors. These at-sea demonstrations will include live tracking events and a combination of live and simulated engagements within a fleet exercise, focused on interoperability assessment. The MTMD Forum Project will sponsor the targets for these and will leverage 3rd Fleet Rim of the Pacific (RIMPAC) resources to conduct the PD exercise. Planning					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt		Project (Number/Name) 3312 / MTMD-Maritime Theater Missile Defense Forum		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>for At-Sea Demonstrations and follow-on at-sea testing will continue into future years and include further IAMD target procurement. The data analysis effort contained within the TPEX line of effort provides the linkage and measures of success between the various MTMD Forum supported at-sea demonstrations that enable key policy makers and leaders to understand capability gaps / possible solutions with quantified metrics. Future planning in FY22 will include Pacific Dragon 24 in August 2024, Formidable Shield (FS) -23 in May 2023, and At-Sea Demo/ FS-25 in May 2025. Formidable Shield exercises are endorsed by Commander U.S. Naval Forces Europe (NAVEUR). Target developments to support PD 24 as well as FS-23 and ASD/FS-25 will also occur in FY22.</p> <p>(6) Operational Requirements group will continue to provide operator's perspective and recommendations to the engineering and test activity conducted in the other working groups. This critical cooperation with Naval Surface & Mine Warfare Development Command (SMWDC) enables the allied linkage into the established relationship between SMWDC and NAVSEA.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The reduction from FY 2021 to FY 2022 is due to the transition of the Tactical Advancement for Next Generation (TANG) project to Office of Naval Research (ONR) PE 0603758N Swampworks/TANG to align with more similar projects.</p>						
Accomplishments/Planned Programs Subtotals		10.186	16.179	11.857	0.000	11.857
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 3330 / Naval Research Laboratory (NRL) Facilities Modernization			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3330: Naval Research Laboratory (NRL) Facilities Modernization	0.000	18.455	16.370	17.144	-	17.144	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This program has been established to provide a systematic and planned approach to improve vital in-house science and technology (S&T) laboratory facilities at the Naval Research Laboratory (NRL) which are reaching or have reached critical stages of deterioration. The program includes restoration and modernization (R&M) initiatives for about 531 facilities, where the average age of the infrastructure is 67 years old.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: NRL Facilities Modernization								18.455	16.370	17.144	0.000	17.144
Articles:								-	-	-	-	-
Description: Critical Science and Technology research cannot be sustained or succeed in deteriorated facilities. World class research can only be accomplished in facilities that are at a minimum "adequate", but preferably "state-of-the-art." Due to their advanced age and deterioration, funds are planned to restore/modernize various laboratory facilities at the Naval Research Laboratory.												
FY 2021 Plans:												
The Naval Research Laboratory plan to undertake numerous planned and emergent studies, evaluations, and modernization projects of laboratory facilities and infrastructure modernization of laboratories to meet future technological threats. Plans in FY 2021 include providing upgrades to current facilities to increase effectiveness as well as critical facilities and equipment repairs.												
Upgrades to facilities planned for in FY 2021 include:												
- Fire suppression system in laboratory space utilized by the Naval Center for Space Technology. This project is planned to be funded fully in FY 2021.												
Facility repair projects planned for in FY 2021 include:												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 3330 / Naval Research Laboratory (NRL) Facilities Modernization				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- Replacement of numerous transformers and switchgears to ensure NRL main-site is able to meet the electrical power needs to conduct S&T work. This project is planned to be funded fully in FY 2021.</p> <p>- Replacement and repair of numerous air handling units to ensure that proper regulation and circulation of air in the heating, ventilating, and air-conditioning (HVAC). This project is planned to be funded fully in FY 2021.</p> <p>- Repair of numerous roofs to ensure laboratory space is not impacted by weather. This project is planned to be funded fully in FY 2021.</p> <p>FY 2022 Base Plans:</p> <p>The Naval Research Laboratory plan to undertake numerous planned and emergent studies, evaluations, and modernization projects of laboratory facilities and infrastructure modernization of laboratories to meet future technological threats. Plans in FY 2022 include providing upgrades to current facilities to increase effectiveness as well as critical facilities and equipment repairs.</p> <p>Upgrades to facilities planned for in FY 2022 include:</p> <p>- Remodeling of numerous spaces to accommodate changing laboratory and administrative workload. These projects are planned to be funded fully in FY 2022.</p> <p>Facility repair projects planned for in FY 2022 include:</p> <p>- Replacement of numerous transformers and switchgears to ensure NRL main-site is able to meet the electrical power needs to conduct S&T work. These projects are planned to be funded fully in FY 2022.</p> <p>- Replacement and repair of chilled water piping and hot water piping to ensure that proper regulation of laboratory space temperatures. This project is planned to be funded fully in FY 2022.</p> <p>- Replacement and repair of numerous air handling units to ensure that proper regulation and circulation of air in the Heating, Ventilating, and Air-Conditioning (HVAC). These projects are planned to be funded fully in FY 2022.</p> <p>- Repair of numerous roofs to ensure laboratory space is not impacted by weather. These projects are planned to be funded fully in FY 2022.</p> <p>FY 2022 OCO Plans:</p> <p>N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement:</p>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt		Project (Number/Name) 3330 / Naval Research Laboratory (NRL) Facilities Modernization	

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The increase from FY21 to FY22 is due to support the growing need to revitalize NRL facilities. The need for items such as roof repair, transformers and switchgears, and Heating, Ventilating, and Air-Conditioning (HVAC) continues to grow and additional resources were provided to accommodate this need.					
Accomplishments/Planned Programs Subtotals	18.455	16.370	17.144	0.000	17.144

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
None

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 3363 / PACOM Initiative			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3363: PACOM Initiative	0.000	14.025	11.666	14.034	-	14.034	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
China Strategic Initiative (CSI) (LI 0605853N). The CSI became a DoD RDTE program in FY 2014. The CSI program is U.S. Indo-Pacific Command's(INDOPACOM)first Asia Rebalance initiative and provides critical support to planning efforts across the Command addressing Secretary of Defense's # 1 priority. CSI is a command-directed program that provides the Commander, INDOPACOM, and his staff vital support at all levels of planning and decision-making within the INDOPACOM Area Of Responsibility. The CSI program provides: cutting-edge research on adversary approaches to warfare, monitoring and analysis of adversary social media and censorship, unique understanding of effects of U.S. actions at the strategic and operational levels, sponsorship of Track 1.5/2 Strategic Nuclear Dialogue with China, etc. This funding is for a classified effort and details can be provided at a higher classification level.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: INDOPACOM Initiative							14.025	11.666	14.034	0.000	14.034	
Articles:							-	-	-	-	-	
Description: China Strategic Initiative (CSI) (LI 0605853N). RDTE funding supports critical classified research that directly advances the core mission and functionality of INDOPACOM's China Strategic Initiative (CSI - a DoD program of record). CSI informs senior U.S. Gov't / DoD policymakers with long-term & strategic insights into the People's Republic of China (PRC) actions/ policies across the spectrum, including domestic/foreign policymaking, political thinking, military policies, economic policies, and many other areas. Part of CSI consists of a series of integrated analytical working groups comprised of experts from the U.S. Gov't (policy, planning, and intelligence), Federally Funded Research and Development Corporations (FFRDCs), academia, and private industry. All PACOM CSI efforts are overseen by a 25-member PACOM Review Board (PRB) to ensure all CSI programs are integrated and not redundant. All program efforts are done under direction of OSD and the China Strategic Roundtable, supporting Great-power competition with China, DoD's top priority for defense planning. CSI program is DoD/PACOM's first Rebalance to Asia initiative issue nomination priority.												
FY 2021 Plans: Continue development and refinement of: deeper analysis of Chinese war theory and strategic planning; increase in the overall number of critical vulnerabilities assessments and methodology, increase in the number of effects testing events at both strategic and operational levels; expansion and sustainment of China media												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt	Project (Number/Name) 3363 / PACOM Initiative		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base
analysis to all Combatant Commands; research/analysis on China's economy and short/long-term effects of U.S. Integration with routine policy and planning processes will mature, alongside efforts to consolidate knowledge management of high-output data yields that generate unique insights into adversary intentions and methodologies in warfare approaches; continue to monitor/analyze Chinese economy and Made in China 2025 plan.					
FY 2022 Base Plans: CSI requires continued/sustained support for expanded studies & analysis of operational/intelligence planning against regional adversaries; deepen understanding of PRC crisis management and strategic decision-making; and core analysis and expertise for strategic and operational level emulation efforts across the entire DIMEFIL. The CSI program office and its Community of Interest (COI) comprise a broad range of subject matter expertise which includes supporting Modeling & Simulation services to assist CSI in researching, developing, testing, and demonstrating a theater-level campaign model based on a range of inputs. Developing a modeling plan which details the method to research, develop, test, and demonstrate a theater level campaign model. Developing a campaign model which details a method of scenario creation that supports a broad range of strategic and operational planning efforts, including C4ISR planning and collection at the national and operational levels. Providing gap analysis to identify shortfalls in the baseline model and suggest alternatives for resolution. The outputs and lessons learned from campaign-level modeling and scenarios will be used to inform CSI COI partners including DoD, the Joint Staff, the COCOMs, the Intelligence Community (IC), and the Interagency to enable key stakeholder decision-making processes across a broad range of topics that include strategic and operational planning, national defense systems acquisition research & development, intelligence collection tasking and target prioritization, strategic messaging, and other critical areas of interest.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: FY2021 to FY2022 increase supports critical classified research that directly advances the core mission and functionality of INDOPACOM's China Strategic Initiative (CSI). CSI requires continued/sustained support for expanded studies & analysis of operational/intelligence planning against regional adversaries; deepen understanding of People's Republic of China (PRC) crisis management and strategic decision-making; and core analysis and expertise for strategic and operational-level emulation efforts across the entire Diplomatic, Information, Military, Economic, Financial, Intelligence and Law Enforcement (DIMEFIL). We continue to support					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & Intl Supt		Project (Number/Name) 3363 / PACOM Initiative		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Federal Funded Resource and Development Centers (FFRDC) work, various studies from private researchers, think tanks and other academic institutions.						
Accomplishments/Planned Programs Subtotals		14.025	11.666	14.034	0.000	14.034
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt				Project (Number/Name) 9999 / Congressional Add			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
9999: Congressional Add	0.000	14.480	10.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Funds execution of DoD's Executive Agent (EA) for Printed Circuit Board (PrCB) Technologies as established by the 2009 National Defense Authorization Act (Section 256, PL 110-417). The primary deliverable from this effort will be a PrCB and Interconnect Technology Roadmap, or strategic plan, identifying domestic technology gaps, future research and development needs, and any policy changes required to ensure that the DoD has access to PrCB manufacturing capabilities and technical expertise necessary to meet future military requirements. As mandated, the EA will also address DoD PrCB supply chain issues, including diversity and vulnerabilities, and develop trustworthiness requirements for PrCBs used in defense systems.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2020	FY 2021			
Congressional Add: Printed Circuit Board Executive Agent								14.480	10.000			
FY 2020 Accomplishments: N/A												
FY 2021 Plans: - Continue to coordinate executive agent activities, receive and assess Service Component PCB R&D activities, and establish DoD Cross-Service Advisory Panel												
- Continue to conduct Organic Substrate Risk & Gap Analysis												
- Continue to implement and maintain PCB Trust Specification (IPC-1791)												
- Continue to Monitor/Assess/Evaluate Technology Development Issues & Topics												
- Continue to conduct DoD PCB manufacturing capability projects												
- Continue to develop processes for Embedded Devices, Additive Manufacturing, and Printed Electronics												
- Continue coordinate with Department of Commerce and Industry Organizations to resolve Industrial Base Supply Chain Issues												
- Continue to develop & implement SCRM Solutions & Tools												
- Continue to conduct Research, Development, and Assessment in support of PCB Roadmap creation												
- Continue to coordinate Knowledge and Capability efforts across DoD to avoid duplication and ensure appropriate technology focus												
- Continue to develop PCB-related Training Modules												
Congressional Adds Subtotals								14.480	10.000			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605853N / Management, Technical & In tl Supt	Project (Number/Name) 9999 / Congressional Add
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy Date: May 2021

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605856N / Strategic Technical Support
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	3.617	3.813	3.538	-	3.538	-	-	-	-	-	-
0128: Mgmt/Tech Supt Strategic	0.000	1.185	1.501	1.510	-	1.510	-	-	-	-	-	-
1038: Acoustic & Non-Acoustic Analysis Supt	0.000	2.432	2.312	2.028	-	2.028	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element supports technical studies and analyses as directed by the Director for Submarine Warfare to support major policy and procurement decisions. This program is divided into two elements to support decision making in the areas of submarine and antisubmarine warfare and undersea surveillance.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	3.742	3.813	3.904	-	3.904
Current President's Budget	3.617	3.813	3.538	-	3.538
Total Adjustments	-0.125	0.000	-0.366	-	-0.366
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.125	0.000			
• Program Adjustments	0.000	0.000	-0.314	-	-0.314
• Rate/Misc Adjustments	0.000	0.000	-0.052	-	-0.052

Change Summary Explanation

The FY2022 funding request was reduced by \$0.314 million to account for the availability of prior year execution balances.

Internal realignment between PU 0128 and PU 1038 in FY21-FY25 that supports additional effort directed towards Tactical Submarine Evolution Plan (TSEP) requirements development for VIRGINIA Class Block VI/VII and follow-on attack submarines (SSNs), TSEP Analysis of Alternatives and Subsea and Seabed Warfare and Undersea Constellation plan development and supporting studies.

Technical: N/A

Schedule: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605856N / Strategic Technical Support				Project (Number/Name) 0128 / Mgmt/Tech Supt Strategic			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0128: Mgmt/Tech Supt Strategic	0.000	1.185	1.501	1.510	-	1.510	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The project provides analytical support to the Director, Undersea Warfare Division as a basis for major policy, planning, and acquisition program decisions. It supports the development of the Submarine Force strategic vision to guide research and development investment strategy and future planning. Additionally, this line supports studies in the area of submarine and undersea surveillance missions, force structure, payloads and sensors, and force employment.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: MANAGEMENT AND TECHNICAL SUPPORT, STRATEGIC Articles:							1.185	1.501	1.510	0.000	1.510	
							-	-	-	-	-	
FY 2021 Plans:												
-Conduct analysis to identify and weigh options for addressing problems/challenges and assessing the impact across the strategic and conventional military spectrum with use of modeling and simulation, including projects such as Tactical Submarine Evolution Plan, Unmanned Undersea Vehicle (UUV)inventory and capabilities modeling, and Subsea and Seabed Warfare.												
- Anticipate emerging and future USW challenges, and lead effective assessment efforts to proactively address those challenges.												
-Provide analysis and support for development and implementation of the Undersea Constellation warfare area strategy.												
FY 2022 Base Plans:												
-Continue to conduct analysis to identify and weigh options for addressing problems/challenges and assessing the impact across the strategic and conventional military spectrum with use of modeling and simulation, including projects such as Tactical Submarine Evolution Plan, Unmanned Undersea Vehicle (UUV)inventory and capabilities modeling, and Subsea and Seabed Warfare.												
- Continue to anticipate emerging and future USW challenges, and lead effective assessment efforts to proactively address those challenges.												
-additional analysis and support for development and implementation of the Undersea Constellation warfare area strategy												
FY 2022 OCO Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605856N / <i>Strategic Technical Support</i>		Project (Number/Name) 0128 / <i>Mgmt/Tech Supt Strategic</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A						
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> The FY21 to FY22 increase .009K in PROJ 0128 supports Unmanned Undersea Vehicle (UUV) inventory and capabilities modeling; in addition to Subsea and Seabed Warfare requirements as part of the internal realignment between PROJ 0128 and 1038 commencing in FY21-FY25. The FY21 to FY22 increase is due to additional analysis and support for development and implementation of the Undersea Constellation warfare area strategy						
Accomplishments/Planned Programs Subtotals		1.185	1.501	1.510	0.000	1.510
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605856N / Strategic Technical Support				Project (Number/Name) 1038 / Acoustic & Non-Acoustic Analysis Supt			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1038: Acoustic & Non-Acoustic Analysis Supt	0.000	2.432	2.312	2.028	-	2.028	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project provides analytical support to the Director, Undersea Warfare as a basis for major policy, planning, and acquisition program decisions. It supports studies in the area of undersea surveillance missions, sensor system communications, and acoustic performance prediction systems, environmental and medical effects of acoustic systems, operational security, and future threat analysis. Supports synthetic mission lay down simulations for Integrated Undersea Surveillance System (IUSS) strategic planning and resource allocation. Supports continued development and documentation of architecture for future undersea surveillance capabilities and systems. Supports studies to determine long-term impact of IUSS active sensors on marine animals and development of Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA), and Compact LFA (CLFA).												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: ACOUSTIC AND NON-ACOUSTIC ANALYSIS SUPPORT Articles: FY 2021 Plans: -Continue comprehensive case analyses to establish a basis for understanding what impact, both positive and negative, our legacy tactical sonar systems and new ASB capability deliveries have on fleet operations. Continue to contribute to OWR. - Continue data set identification and production as the sole source for real-world data to enable advanced development initiatives which span Defense Advanced Research Projects Agency (DARPA), Office of Naval Research (ONR), Integrated Warfare Systems (IWS), Space & Naval Warfare Systems Command (SPAWAR), Naval Research Laboratory (NRL), and others to bring critically needed new capabilities and capability improvements to the IUSS community. - Provide support for requirements development for the Integrated Undersea Surveillance Systems family of systems provided by fixed, mobile, deployable sensors, integrated common processor, and the advanced surveillance builds. - Provide support on IUSS systems in the gate and JCIDS process, including IUSS Deployable family of systems. - Provide analyses in support of IUSS Future Plan and Maritime Surveillance Evolution Plan.							2.432	2.312	2.028	0.000	2.028	
							-	-	-	-	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605856N / Strategic Technical Support		Project (Number/Name) 1038 / Acoustic & Non-Acoustic Analysis Supt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
<p>-Provide analysis and support for development and implementation of the Undersea Constellation warfare area strategy.</p> <p>FY 2022 Base Plans:</p> <p>-To continue comprehensive case analyses to establish a basis for understanding what impact, both positive and negative, our legacy tactical sonar systems and new ASB capability deliveries have on fleet operations. Continue to contribute to OWR.</p> <p>- To continue data set identification and production as the sole source for real-world data to enable advanced development initiatives which span Defense Advanced Research Projects Agency (DARPA), Office of Naval Research (ONR), Integrated Warfare Systems (IWS), Space & Naval Warfare Systems Command (SPAWAR), Naval Research Laboratory (NRL), and others to bring critically needed new capabilities and capability improvements to the IUSS community.</p> <p>- To provide support for requirements development for the Integrated Undersea Surveillance Systems family of systems provided by fixed, mobile, deployable sensors, integrated common processor, and the advanced surveillance builds.</p> <p>- To provide support on IUSS systems in the gate and JCIDS process, including IUSS Deployable family of systems.</p> <p>- To provide analyses in support of IUSS Future Plan and Maritime Surveillance Evolution Plan.</p> <p>- To provide analysis and support for development and implementation of the Undersea Constellation warfare area strategy.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The FY21 to FY22 \$.284K decrease reduces the amount of analyses supporting Undersea Constellation warfare strategy development</p>						
Accomplishments/Planned Programs Subtotals		2.432	2.312	2.028	0.000	2.028
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605856N / Strategic Technical Support	Project (Number/Name) 1038 / Acoustic & Non-Acoustic Analysis Supt
D. Acquisition Strategy N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy Date: May 2021

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	92.596	103.630	135.149	-	135.149	-	-	-	-	-	-
0568: RDT&E Acft Flt Hours	0.000	33.543	37.176	38.461	-	38.461	-	-	-	-	-	-
0569: RDT&E Acft Supt	0.000	33.017	38.598	54.013	-	54.013	-	-	-	-	-	-
2924: SDTS	0.000	12.862	12.551	15.061	-	15.061	-	-	-	-	-	-
3206: T&E Enterprise	0.000	12.982	15.105	14.735	-	14.735	-	-	-	-	-	-
3238: Threat Engineering	0.000	0.192	0.200	12.879	-	12.879	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This continuing program provides support for the Self Defense Test Ship and developmental test squadron aircraft required to support Research, Development, Test and Evaluation (RDT&E) of new systems. The RDT&E ship and aircraft inventory is required to adequately test modifications and improvements to fielded weapon systems and sensors and new weapon systems and sensors and evaluate modifications to address new threat capabilities to increase the warfighting capability of the fleet. The program provides integrated logistics support for aircraft at selected field activities, provides depot-level maintenance of aircraft, engines and components for the Navy's inventory of RDT&E aircraft; and provides support for DON aircraft in the custody of contractors in support of RDT&E. The Self Defense Test Ship is a remotely operated platform that supports the test and evaluation of surface ship sensors, combat systems and weapons within the close-in self defense zone. Cost covered under this element include test execution for the Air Warfare Ship Self-Defense Enterprise, aircrew training and proficiency, fuel, supplies, equipment, repair and Aviation Depot Level Repairables, as well as organizational, intermediate and depot maintenance of aircraft in the Navy RDTE inventory and the Self Defense Test Ship. Threat engineering provides test and evaluation (T&E) modeling and simulation (M&S) products and informs targets, simulators, and stimulator designs and development. This project satisfies Surface Navy advanced missile system threat characterization and verification, validation, & accreditation (VV&A) requirements for testing

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support		PE 0605863N / RDT&E Ship & Aircraft Support			
B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	93.872	104.822	105.814	-	105.814
Current President's Budget	92.596	103.630	135.149	-	135.149
Total Adjustments	-1.276	-1.192	29.335	-	29.335
• Congressional General Reductions	-	-1.192			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.276	0.000			
• Program Adjustments	0.000	0.000	30.200	-	30.200
• Rate/Misc Adjustments	0.000	0.000	-0.865	-	-0.865
Change Summary Explanation					
Project 2924: The 2017 Board of Inspection and Survey (INSURV) report identified numerous material issues that has resulted in an increase in the required labor and consumable parts required to accomplish routine preventive maintenance to prevent recurrence of identified deficiencies and material degradation of Self Defense Test Ship Hull, Mechanical and Electrical (HM&E) systems. FY 2022 funding increase of \$2.51M reflects the increased costs associated with maintaining the Self Defense Test Ship in sufficient material condition to support on-demand, unrestricted operations at sea in direct support of NAVSEA combat system, sensor and weapon system test and evaluation. Funding will cover increased costs associated with labor, replacement parts and consumables associated with preventive and corrective maintenance and repair, and support the planned repair or replacement of critical Hull, Mechanical and Electrical systems.					
Project 3206:N/A					
Project 3238: Acquisition Threat Engineering Product (ATEP) increase of \$12.679M from FY 2021 to FY 2022 provides funds to increase ATEP model delivery from three in FY 2021 to seven in FY 2022.					
Project 0569: : Increase in funding of \$15.415M from FY 2021 to FY 2022 is in response to the cost increases in required aircraft depot inspection and maintenance cost and periodic aircraft engine overhauls and aviation depot level repairables associated with preventive and corrective maintenance. Funding also reflects the extension of one E-2D airframe in the RDTE aircraft inventory and the funding required to execute depot maintenance availabilities associated with these airframes scheduled for FY 2022. In addition, the funding increase addresses overall increases in the cost of repairable parts associated with readiness flights, and cost growth associated Planned Depot Maintenance events of existing RDT&E inventory of aircraft and engines, to include funding of following major depot events: 1 P-3; 2 P-8s; 2 C-130Ts; 8 FA-18s; 5 H-60s; 1 UH-1Y; and 1 AH-1Z.					
Schedule: Not applicable.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support				Project (Number/Name) 0568 / RDT&E Acft Flt Hours			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0568: RDT&E Acft Flt Hours	0.000	33.543	37.176	38.461	-	38.461	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Research, Development, Test and Evaluation (RDT&E) Aircraft Flight Hours. This non-acquisition project supports direct flight hour costs and a portion of the costs of Aviation Depot Level Repairables (AVDLR) associated with NAVAIR test pilot proficiency flights, including organizational and intermediate maintenance, associated consumables, including petroleum, oil, lubricants and spare and replacement parts for components that fail. Annual test pilot flight hours, as delineated in OPNAVINST 3710.7 are satisfied through a combination of program funded test flights, which vary year to year based on program schedules; and flights funded through this project unit to ensure a baseline level of pilot readiness. These flight hours ensure test pilots remain proficient in assigned type / model / series aircraft in which they are qualified (approximately 3 hours per month) during lulls in program test schedules to ensure proficient test pilots are available to safely support aviation program testing. Readiness hours are designed to provide aircrew with a minimum of 11 flight hours per month, for a total of 133 hours annually. Flight hours support post maintenance acceptance test flights, aircrew training and test pilot proficiency when test program demand is low, in direct support of Research and Development Programs at Naval Air Systems Command, and Office of Naval Research flight activities.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward maintaining test pilot readiness in direct support of general research, development, test and evaluation.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: RDT&E Acft Flt Hours	33.543	37.176	38.461	0.000	38.461
Articles:	-	-	-	-	-
FY 2021 Plans: Continue to provide organizational and intermediate-level maintenance, supply and petroleum, oil and lubricants in support of test pilot proficiency flights. Increase in funding, funds readiness to 60% of the requirement. Increase is based on assessment of FY21 program workload to ensure test pilots remain sufficiently proficient in order to meet OPNAVINST 3710.7 requirements to ensure flight safety and to reduce the risk of aviation mishaps.					
FY 2022 Base Plans: Provide organizational and intermediate-level maintenance, supply and petroleum, oil, lubricants and spare and replacement parts for components that fail in support of test pilot proficiency flights. Increase in funding, funds readiness to 60% of the requirement. Increase is based on assessment of FY22 program workload to ensure					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support	Project (Number/Name) 0568 / RDT&E Acft Flt Hours			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
test pilots remain sufficiently proficient in order to meet OPNAVINST 3710.7 requirements to ensure flight safety and to reduce the risk of aviation mishaps.					
<i>FY 2022 OCO Plans:</i> N/A					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Budget increase of \$1.285M from FY 2021 to FY 2022 reflects increased costs associated with Consumable Parts and organizational contract maintenance in support of monthly readiness flight hour requirements for NAVAIR test pilots supporting RDT&E of Navy aviation programs.					
Accomplishments/Planned Programs Subtotals	33.543	37.176	38.461	0.000	38.461
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy Not Applicable					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support				Project (Number/Name) 0569 / RDT&E Acft Supt			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0569: RDT&E Acft Supt	0.000	33.017	38.598	54.013	-	54.013	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Research, Development, Test and Evaluation (RDT&E) Aircraft Support. This continuing project funds costs associated with the preventive and corrective maintenance of fixed and rotary wing aircraft which directly support test and evaluation of aircraft and associated weapon systems and sensors. Testing aboard dedicated RDT&E aircraft reduces the number of fleet units required to support test and evaluation of aviation programs. This project unit funds airframe Standard Depot Level Maintenance (SDLM), the Integrated Maintenance Concept and Planned Depot Maintenance, major in-service repairs, emergent repairs and aircraft engine periodic maintenance and overhauls and aircraft material condition and field inspections. Also included in this project unit, are the costs of Aviation Depot Level Repairables (AVDLR), which are spare and replacement parts for components that fail during the conduct of readiness flight operations, aircrew training and proficiency flight hours, and must be replaced to support follow-on flight operations. This project unit also funds Aircraft Structure Periodic Assessments (ASPA), Individual Material Readiness List (IMRL) tools and support equipment, Aviation Climate Assessment Survey System (ACASS) and other projects and peripheral equipment associated with the maintenance of flight readiness for RDT&E aircraft.												
JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing equipment required for general research, development, test and evaluation.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: Aircraft/Engine Maintenance and AVDLR/IMRL Support							32.417	37.998	53.413	0.000	53.413	
							Articles: -	-	-	-	-	
FY 2021 Plans: Continue support of RDT&E Aircraft planned depot maintenance availabilities while funding annual operating and sustainment costs associated with Aviation Depot Level Repairables (AVDLR) and Individual Material Readiness List (IMRL) items associated with test pilot proficiency flights, engine repairs and overhauls, and emergent repairs to RDT&E aircraft. Execute Depot Availabilities for two KC-130Ts, newly established Planned Depot Maintenance activity for two E-2D aircraft, Engine Overhauls for the C-20G and Depot availabilities for seven F-18 variant aircraft and three MH-60S helicopters. The 2021 plan supports operations and implementation of Naval Air Enterprise Naval Sustainment Systems in support of fleet aircraft readiness efforts.												
FY 2022 Base Plans: Provide support of RDT&E Aircraft planned depot maintenance events while funding annual operating and sustainment costs associated with Aviation Depot Level Repairables (AVDLR) and Individual Material Readiness												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support		Project (Number/Name) 0569 / RDT&E Acft Supt			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
List (IMRL) items associated with test pilot proficiency flights, engine repairs and overhauls, and emergent repairs to RDT&E aircraft. Execute Depot events for two KC-130Ts, two P-3Cs, efforts to support an additional Planned Depot Maintenance activity for one E-2D aircraft, and Depot events for seven F-18 variant aircraft, and four MH-60 helicopters. The 2022 base plan supports operations and implementation of Naval Air Enterprise Naval Sustainment Systems in support of fleet aircraft readiness efforts.							
FY 2022 OCO Plans: N/A							
FY 2021 to FY 2022 Increase/Decrease Statement: Budget increase from FY 2021 to FY 2022 is in direct support of increases in depot and overhaul costs necessary to sustain aircraft assigned to developmental test squadrons. Increase also includes the funding required to conduct depot maintenance on one E-2D airframes in FY 2022, which were transferred into the RDTE aircraft inventory. Additional funding was also provided to address increases in the costs associated with aviation depot level repairable parts associated with readiness flights, and cost growth associated with Planned Depot Maintenance events of existing RDT&E inventory of aircraft and engines, to include funding of following major depot events: 2 KC-130Ts; 2 P-3Cs; 7 FA-18s; and 4 H-60s.							
Title: In-Service Repairs Articles:			0.600 -	0.600 -	0.600 -	0.000 -	0.600 -
FY 2021 Plans: Continue to provide planned In-Service Repair funds for emergent repair requirements to aircraft performing mission critical test and evaluation projects.							
FY 2022 Base Plans: Provide planned In-Service Repair funds for emergent repair requirements to aircraft performing mission critical test and evaluation projects.							
FY 2022 OCO Plans: N/A							
Accomplishments/Planned Programs Subtotals			33.017	38.598	54.013	0.000	54.013
C. Other Program Funding Summary (\$ in Millions) N/A							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support	Project (Number/Name) 0569 / RDT&E Acft Supt
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy		
N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support				Project (Number/Name) 2924 / SDTS			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2924: SDTS	0.000	12.862	12.551	15.061	-	15.061	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project provides for the preventive and corrective maintenance of mission critical Hull Mechanical and Electrical (HM&E) and remote control system maintenance aboard the Self-Defense Test Ship (SDTS) in support of the Navy RDT&E of ship self-defense systems. Testing aboard this ship provides the capability to safely test self-defense weapon systems within their minimum range and reduces the number of fleet units required to support RDT&E efforts.												
Funds are used to purchase expendable supplies and repair parts, conduct routine and emergent routine equipment maintenance, and repairs and supporting services.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: SDTS							12.862	12.551	15.061	0.000	15.061	
Articles:							-	-	-	-	-	
FY 2021 Plans: NSWC PHD continues to conduct management, operation, maintenance and repair/upgrade of critical ship HM&E systems to ensure safe operation of the Self Defense Test Ship (SDTS). Maintain, operate, configure and upgrade the Test Ship Remote Control System (TSCRS) and associated infrastructure in support of T&E requirements onboard the SDTS to support the Air Warfare Ship Self Defense Enterprise test requirements as well as surface ship combat system developmental test programs. Continue to work outstanding maintenance and repair efforts and complete necessary repairs to clear any outstanding Departures from Specification (DFS).												
FY 2022 Base Plans: NSWC PHD continues to conduct management, operation, maintenance and repair/upgrade of critical ship HM&E systems to ensure safe operation of the Self Defense Test Ship (SDTS). Maintain, operate, configure and upgrade the Test Ship Remote Control System (TSCRS) and associated infrastructure in support of T&E requirements onboard the SDTS to support the Air Warfare Ship Self Defense Enterprise test requirements as well as surface ship combat system developmental test programs. Continue to work outstanding maintenance and repair efforts and complete necessary repairs to clear any outstanding Departures from Specification (DFS).												
FY 2022 OCO Plans: N/A												
FY 2021 to FY 2022 Increase/Decrease Statement:												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support	Project (Number/Name) 2924 / SDTS			

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Increase of \$2.51M provide funds to cover efforts required to maintain and repair the SDTS at the full operational level as identified in the recent INSURV report. Funding addresses increased labor, consumables and repair part requirements associated with preventive maintenance and emergent equipment repairs. Funding also supports the planned replacement or overhaul of critical Hull, Mechanical and Electrical systems.					
Accomplishments/Planned Programs Subtotals	12.862	12.551	15.061	0.000	15.061

C. Other Program Funding Summary (\$ in Millions)
 N/A
Remarks

D. Acquisition Strategy
 This line of accounting is for recurring HM&E and ship maintenance.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support				Project (Number/Name) 3206 / T&E Enterprise			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3206: T&E Enterprise	0.000	12.982	15.105	14.735	-	14.735	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
T&E Enterprise consolidates all Air Warfare Ship Self Defense (AW SSD) testing across multiple class ships (LHA 6, CVN 78, DDG 1000, LSD 52, and LCS) into the least number of test events. This approach merges common ship, element, and system requirements into common infrastructure for combined Developmental and Operational Testing (DT/OT) of the Surface Navy antiship cruise missile (ASCM) defense requirement, expressed as a Probability of Raid Annihilation (Pra). Enterprise characterizes system performance with Modeling & Simulation (M&S) assessments and live-fire demonstrations.												
Enterprise Cost elements:												
a) Enterprise Testing and Planning. SDTS and Lead Ship tracking and firing exercises versus single- and dual-, subsonic and supersonic ASCM threat surrogates. Includes the contractor and government costs to administer the Enterprise, collect and distribute data from live events, maintain Cybersecurity certifications, and financial management.												
b) Self-Defense Test Ship (SDTS) Combat Systems. Includes installation, check-out, stage testing, routine preventive maintenance, and repairs of major combat systems elements.												
c) Enterprise Testbed (ETB). Includes all M&S costs required to create OT-quality digital representations of shipboard combat system performance including infrastructure, distributed secure network, and common environmental services for DT/OT.												
SDTS testing requirements outlined in AW SSD Enterprise TEMP 1714 and lead/operational ship testing requirements for Evolved Sea Sparrow Missile (ESSM) TEMP 1471, Rolling Airframe Missile (RAM) Blk 2 TEMP 286-2, DDG 1000 TEMP 1560, CVN 78 TEMP 1610, Cooperative Engagement Capability (CEC) TEMP 1415, SSDS TEMP 1400, LHA 6 TEMP 1697, AN/SPQ-9B TEMP 1463, Surface Electronic Warfare Improvement Program (SEWIP) TEMP 1658 (Block 1A), and LCS TEMP 1695.												
The T&E Enterprise merges common ship, element, and system requirements into the least number of test events while leveraging planned Combat System Ship Qualification Trials (CSSQTs) to accomplish Developmental Testing (DT) and Operational Testing (OT) requirements. All tests on the SDTS require the sharing of infrastructure, missile range allocations, execution time and underway time to eliminate duplicative testing. T&E Enterprise provides end-to-end mission Operational Testing in a realistic operational environment, capitalizing on Probability of Raid Annihilation Modeling and Simulation (M&S) data validated with results of that Operational and Live Fire Testing, and ensuring a consistent approach across ship classes. Applicability of all test events is beneficial across multiple ship classes with the same variation under test.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: T&E Enterprise								12.982	15.105	14.735	0.000	14.735
Articles:								-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support	Project (Number/Name) 3206 / T&E Enterprise				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>FY 2021 Plans:</p> <p>Continue to conduct test planning which includes white cell planning meetings, TEMP working group meetings, and other meetings that support at-sea and Enterprise Testbed (ETB) events for CVN 78, LSD 52, and LCS, in order to be postured to execute these events if funding is made available. Continue test planning efforts for the follow-on ship classes (e.g. CVN 79, LHA 8, LPD FLT II) and assist the pertinent stakeholders in developing test planning documentation and resourcing requirements. Develop acquisition plans for required equipment onboard SDTS to meet test requirements for follow-on ship classes. Continue Enterprise Testbed (ETB) virtual range development, and documentation of the ETB and coordination of a multi-organizational team to perform overarching enterprise systems engineering applicable to all ETB baselines.</p> <p>Continue routine combat systems maintenance and IA/Cybersecurity Certification and Accreditation on combat systems elements and the remote control system on the SDTS. Continue to facilitate the integration of systems into the PEO IWS M&S shared technical framework to allow the most efficient utilization of the ETB.</p> <p>FY 2022 Base Plans:</p> <p>Continue to conduct test planning which includes white cell planning meetings, TEMP working group meetings, and other meetings that support at-sea and Enterprise Testbed (ETB) events for CVN 78, LSD 52, and LCS, in order to be postured to execute these events if funding is made available. Continue test planning efforts for the follow-on ship classes (e.g. CVN 79, LHA 8, LPD FLT II) and assist the pertinent stakeholders in developing test planning documentation and resourcing requirements. Develop acquisition plans for required equipment onboard SDTS to meet test requirements for follow-on ship classes. Continue Enterprise Testbed (ETB) virtual range development, and documentation of the ETB and coordination of a multi-organizational team to perform overarching enterprise systems engineering applicable to all ETB baselines.</p> <p>Continue routine combat systems maintenance and IA/Cybersecurity Certification and Accreditation on combat systems elements and the remote control system on the SDTS. If repair parts are required to support T&E event(s), impacted T&E User may be required to fund replacement parts. Continue to facilitate the integration</p>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support		Project (Number/Name) 3206 / T&E Enterprise		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
of systems into the PEO IWS M&S shared technical framework to allow the most efficient utilization of the Enterprise Test Bed (ETB).						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: Funding decrease in FY2021 to FY2022 due to shift from T&E Enterprise budget to T&E users being required to fund replacement parts that fail during testing events.						
Accomplishments/Planned Programs Subtotals		12.982	15.105	14.735	0.000	14.735
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support				Project (Number/Name) 3238 / Threat Engineering			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3238: Threat Engineering	0.000	0.192	0.200	12.879	-	12.879	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Threat Engineering program assesses the current and future threat environment, and works in coordination with the Office of Naval Intelligence (ONI) to develop, produce, and evolve digital threat engineering models in support of test and evaluation (T&E) requirements.

Acquisition Threat Engineering Product (ATEPs) are developed to meet combat/weapon system Systems Engineering and T&E requirements across surface platforms. ATEPs are valid T&E assets that satisfy Director of Operational Test and Evaluation (DOT&E) and Commander Operational Test & Evaluation Force (COMOPTEVFOR) requirements in both Modeling and Simulation (M&S) testbed and at-sea configurations. ATEP satisfies COMOPTEVFOR's threat models requirement for fidelity commensurate with the blue-force system representations and contain intel-derived lethality/vulnerability data, physics-based six degrees-of-freedom models, reactive seekers and guidance, and other engineering data. ATEP is necessary to evaluate mandatory ship Key Performance Parameters (KPP) including operational effectiveness and suitability to include a system's lethality and survivability, and achieving its performance requirements within operation and sustainment costs.

Threat Engineering products inform investment strategies, validate the effectiveness of capabilities provided to the Fleet, and augment live-fire T&E to obtain affordable, statistical confidence in measured performance. Threat Engineering work is prioritized to avoid technical surprise, avoid point solutions, and ensure Fleet capability against specific threats (most stressing, unique, or widely deployed and exported). Total cost approximately \$5-30M per ATEP and includes all features and capabilities, unlimited number of runs, and use for live, virtual, constructive (LVC) testing. Compare to \$100M-1,000M per live-fire test target development and \$1-3M per unit test target firing with specific, limited features and inability to test operationally relevant scenarios.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Threat Engineering	0.192	0.200	12.879	0.000	12.879
Articles:	-	-	-	-	-
FY 2021 Plans:					
Acquisition Threat Engineering Product (ATEP) complete and deliver 1x hybrid (airbreathing subsonic/solid supersonic), 1x airbreathing supersonic, and post-intercept debris simulation. Begin work on 1x hybrid (airbreathing subsonic/solid supersonic), 2x airbreathing supersonic, and 2x airbreathing subsonic. Continue support and sustainment to existing ATEP models.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605863N / RDT&E Ship & Aircraft Support		Project (Number/Name) 3238 / Threat Engineering		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Threat Requirements Development with the Intelligence Community and Program Offices to prioritize threat engineering work to avoid technical surprise, avoid point solutions, and ensure Fleet capability against specific threats (most stressing, unique, or widely deployed and exported). FY 2022 Base Plans: Acquisition Threat Engineering Product (ATEP) complete and deliver 1x hybrid (airbreathing subsonic/solid supersonic) and 1x airbreathing subsonic. Begin work on 2x solid hypersonic (antiship ballistic missile), 1x airbreathing hypersonic, 1x hybrid (airbreathing subsonic/solid supersonic), 2x airbreathing supersonic, and 1x airbreathing subsonic. Continue support and sustainment to existing ATEP models. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Increase of \$12.679M from FY2021 to FY2022 provides funds to begin work on 2x solid hypersonic (antiship ballistic missile) and 1x airbreathing hypersonic as well as support/sustainment to existing ATEP models. Funds are needed for development of threat products, including ATEP Products, that are essential for analysis, requirements development, and developmental and operational test and evaluation. The increase ensures that these required products are developed to help cure severe limitations to test currently experienced within the PEO IWS Programs.						
Accomplishments/Planned Programs Subtotals		0.192	0.200	12.879	0.000	12.879
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
New start program required integration into an existing applicable PE. This program is in direct support to an Enterprise Test & Evaluation strategy that includes live fire test events ISO Modeling & Simulation efforts for both Developmental and Operational Testing.						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>											
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	522.497	418.873	429.277	-	429.277	-	-	-	-	-	-
0541: <i>AUTEC</i>	0.000	53.840	54.213	59.626	-	59.626	-	-	-	-	-	-
0566: <i>NAVAIR Environmental Compliance</i>	0.000	4.572	4.158	4.960	-	4.960	-	-	-	-	-	-
0653: <i>NAWC Weapons Division</i>	0.000	155.988	152.741	150.136	-	150.136	-	-	-	-	-	-
0654: <i>NAWC Acft Division</i>	0.000	100.281	101.753	103.943	-	103.943	-	-	-	-	-	-
2511: <i>Natural Disaster Relief</i>	0.000	130.444	26.388	26.631	-	26.631	-	-	-	-	-	-
2921: <i>Pacific Missile Range Facility</i>	0.000	5.394	5.413	5.960	-	5.960	-	-	-	-	-	-
2922: <i>MRTFB Maint & Repair</i>	0.000	41.382	37.246	47.081	-	47.081	-	-	-	-	-	-
2958: <i>Cyberspace Activities</i>	0.000	0.433	0.439	0.444	-	0.444	-	-	-	-	-	-
3154: <i>Nanoose and Dabob Bay Ranges</i>	0.000	12.714	12.899	14.429	-	14.429	-	-	-	-	-	-
3386: <i>MRTFB Marine Vessels</i>	0.000	17.449	23.623	16.067	-	16.067	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing installations or operations and maintenance required to support research, development, test and evaluation.

This program provides institutional maintenance and operations support for: the Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center, Andros Island, Bahamas; the Environmental Compliance Program; Naval Air Warfare Center Weapons Division, Point Mugu and China Lake, CA; Naval Air Warfare Center Aircraft Division, Patuxent River, MD; Test and Evaluation related capabilities at the Pacific Missile Range Facility, Barking Sands, HI; Maintenance and Repair at Naval Air Warfare Center Weapons Division, Naval Air Warfare Center Aircraft Division, and Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center. The program also provides marine vessels overhauls and preventative maintenance in support of the 23 Major Range and Test Facility Base marine vessels located at Naval Air Warfare Center Weapons Division, Point Mugu, CA, Pacific Missile Range Facility, Honolulu, HI, Naval Undersea Warfare Center Keyport Nanoose and Dabob Bay Ranges, Keyport, WA, Naval Air Warfare Center Aircraft Division, Patuxent River, MD, and Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center. The Test and Evaluation activities make up the Navy portion of the Department of Defense's Major Range and Test Facility Base. These activities are chartered to perform Test and Evaluation for the development and acquisition of technologically advanced weapons systems. Core Test and Evaluation capabilities and capacity are operated to obtain weapons system performance documentation for acquisition program milestone decisions to

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>
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provide operational forces with effective weapons systems. This program provides Navy Acquisition Program Managers required test capabilities; lowers cost of Test and Evaluation; removes cost and scheduling impact of developing and providing their own Test and Evaluation capabilities; and retains the physical airspace, land space and sea space needed to conduct testing.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	522.972	446.960	444.077	-	444.077
Current President's Budget	522.497	418.873	429.277	-	429.277
Total Adjustments	-0.475	-28.087	-14.800	-	-14.800
• Congressional General Reductions	-	-0.339			
• Congressional Directed Reductions	-	-27.748			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.891	0.000			
• SBIR/STTR Transfer	-1.366	0.000			
• Program Adjustments	0.000	0.000	-13.023	-	-13.023
• Rate/Misc Adjustments	0.000	0.000	-1.777	-	-1.777

Change Summary Explanation

The FY 2022 funding request was increased since the previous President's Budget submission by \$4.786M for Natural Disaster Recovery efforts; reduced by \$17.809M to account for the availability of prior year execution balances; and reduced by \$1.777M for miscellaneous rate adjustments.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 0541 / AUTECH			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0541: AUTECH	0.000	53.840	54.213	59.626	-	59.626	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

As a detachment of Naval Undersea Warfare Center, Division Newport, the mission of the Atlantic Undersea Test and Evaluation Center is to provide the US Navy an underwater range facility for full-spectrum test and evaluation of Undersea Warfare systems and for Fleet training and readiness assessment. The Atlantic Undersea Test and Evaluation Center Program Office is headquartered at Newport, RI. Atlantic Undersea Test and Evaluation Center's administrative offices are located at West Palm Beach, Florida. Test facilities are located at Andros Island, Sites 1 through 4, and the Berry Islands in the Bahamas. Atlantic Undersea Test and Evaluation Center aircraft make scheduled daily flights between West Palm Beach and Andros Town Airport.

Atlantic Undersea Test and Evaluation Center manages and, under service contract, maintains and operates a 500 square nautical mile deep-water and a 100 square nautical miles shallow-water range; air-target tracking capabilities; sonobuoy simulation systems; electronic warfare threat simulation systems; rotary wing aircraft; aircraft ground support facilities; acoustic targets; torpedo retrieval and flushing capabilities; open-ocean range craft; marine support facilities; and data processing and analysis capabilities.

Major test facilities on Andros Island are located at Site 1. The Command Control Building houses the range tracking displays and replay centers, the computer center, operations support functions, communications center, and the central timing system. The Range Support Facility houses a torpedo post-run workshop, Mark 46 /Mark 50 and Mark 54 lightweight torpedo Intermediate Maintenance Activity, a Mark 30 undersea target Intermediate Maintenance Activity, a Mark 48 heavyweight torpedo Research and Development Turnaround facility and related technical facilities. The complex includes electrical and physical calibration labs, a complete electronics maintenance shop, a dive locker, a precision machine shop, and logistics support areas.

Atlantic Undersea Test and Evaluation Center has a 285-foot concrete pier with a controlling depth of 17 feet (5.2 meters) at mean low tide. An adjacent wharf is approximately 240 feet in length (72 meters) with a controlling depth of 15 feet at mean low tide. Power is available at both locations. Facilities at the pier/marine area include fully equipped machine /fabrication and marine overhaul shops. Also at Site 1, six Range User Buildings are maintained for assembling test equipment and equipment check-out during test mobilization or dockside periods. These staging areas are equipped with a variety of power sources, gantry cranes, compressed air and security features. A fully equipped range user hanger for ground maintenance and storage of helicopters is located at the Atlantic Undersea Test and Evaluation Center helicopter airstrip. Sites 2, 3, and 4 are small instrumented areas located south of Site 1 used to extend tracking of sonobuoys, communications, and air target track. This project funds costs that are not chargeable to customers.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Atlantic Undersea Test and Eval Ctr Facility	42.084	42.457	47.870	0.000	47.870
Articles:	-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support	Project (Number/Name) 0541 / AUTECH			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Description: Atlantic Undersea Test and Evaluation Center is a Test and Evaluation facility for collecting selected underwater, surface and air tracking data on test participants. In accordance with Department of Defense Directive 3200.11, this project funds the overhead/institutional costs required to sustain the Major Range and Test Facility capabilities at Atlantic Undersea Test and Evaluation Center.</p> <p>FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources, instrumentation systems and marine craft required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Major Range and Test Facility Base operations. Reimburse the Command for General and Administrative support services. Continue to support resolution of policy compliance issues resulting from a Naval Sea Systems Command Inspector General/Newport Office of Counsel and Contracting review.</p> <p>FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources, instrumentation systems and marine craft required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Major Range and Test Facility Base operations. Reimburse the Command for General and Administrative support services. Continue to support resolution of policy compliance issues resulting from a Naval Sea Systems Command Inspector General/Newport Office of Counsel and Contracting review.</p> <p>FY 2022 OCO Plans: Not Applicable</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Funding increase from FY 2021 to FY 2022 in support of Information Assurance, Cyber Security and Vehicle Recapitalization.</p>						
<p>Title: Bahamian Lease</p> <p style="text-align: right;">Articles:</p> <p>Description: Rental payments to the Bahamian government for use of land and ocean in the Bahamas.</p> <p>FY 2021 Plans: Continue to provide rental payments to the Bahamian government for use of land and ocean in the Bahamas.</p>		11.756 -	11.756 -	11.756 -	0.000 -	11.756 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 0541 / <i>AUTEC</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
OCO: Not applicable FY 2022 Base Plans: Continue to provide rental payments to the Bahamian government for use of land and ocean in the Bahamas. FY 2022 OCO Plans: Not applicable						
Accomplishments/Planned Programs Subtotals		53.840	54.213	59.626	0.000	59.626
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
Not applicable.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>				Project (Number/Name) 0566 / <i>NAVAIR Environmental Compliance</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0566: <i>NAVAIR Environmental Compliance</i>	0.000	4.572	4.158	4.960	-	4.960	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This continuing project supports environmental compliance, conservation and pollution prevention related efforts at the Navy Major Range and Test Facility Base located at Patuxent River, MD, China Lake, CA, Point Mugu, CA, and Atlantic Undersea Test and Evaluation Center, Bahamas. The Navy Major Range and Test Facility Base environmental projects include ongoing efforts to comply with Federal, State, and local environmental requirements.

The Major Range and Test Facility Base are test and evaluation facilities that provide for Department of Defense test and evaluation support missions. These missions include: Weapons system testing, military operational squadron training on new weapon systems, and validation of performance or operational characteristics.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Environmental Compliance	4.572	4.158	4.960	0.000	4.960
Articles:	-	-	-	-	-
Description: Projects supporting level 1 compliance requirements at Naval Air Systems Command Ranges inclusive of hazardous waste disposal, Resource Conservation & Recovery Act, Subtitle C - 40 CFR 260 through 279, and Emergency Planning and Community Right-to-Know Act, Sections 311-312; solid waste disposal, Resource Conservation & Recovery Act, Subtitle D - 40 CFR Parts 239 through 259; natural & cultural resources programs, National Environmental Policy Act, Environmental Protection Act, Marine Mammal Protection Act, Endangered Species Act, Archeological and Historic Preservation Act, maintenance of environmental permits, Clean Air Act, Clean Water Act, and environmental monitoring. Resource Conservation & Recovery Act, 42 U.S.C. Section 6901 et sequens 1976; Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001-11050 et sequens 1986; National Environmental Policy Act, 42 U.S.C. Section 4331 et sequens 1969; Marine Mammal Protection Act, 16 U.S.C. Section 1361 et sequens 1972; Clean Water Act, 33 U.S.C. Section 1251-1387 1972; ESA, 7 U.S.C. Section 136, 16 U.S.C. Section 1531 et sequens 1973; Archeological and Historic Preservation Act, 16 USC Section 469-469c-2 1960; and Clean Air Act, Title V, 33 U.S.C. Section 1251 et sequens 1972.					
FY 2021 Plans: Continue the identification and funding of level 1 requirements that support compliance projects at Naval Air and Naval Sea Systems Command Ranges to ensure applicable laws and regulations are met and Range mission/					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 0566 / <i>NAVAIR Environmental Compliance</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
operations proceed unencumbered. Support Testing for Global Information Systems Encroachment and Cultural Surveys. <i>FY 2022 Base Plans:</i> Continue the identification and funding of level 1 requirements that support compliance projects at Naval Air and Naval Sea Systems Command Ranges to ensure applicable laws and regulations are met and Range mission/ operations proceed unencumbered. Support Testing for Global Information Systems Encroachment and Cultural Surveys. <i>FY 2022 OCO Plans:</i> N/A <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funding increase from FY 2021 to FY 2022 reflects an increase in Solid Waste Disposal at AUTEC, Bahamas.						
Accomplishments/Planned Programs Subtotals		4.572	4.158	4.960	0.000	4.960
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
Not applicable.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>				Project (Number/Name) 0653 / <i>NAWC Weapons Division</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0653: <i>NAWC Weapons Division</i>	0.000	155.988	152.741	150.136	-	150.136	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project provides continuing maintenance and operational support for the Naval Air Warfare Center Weapons Division Test and Evaluation capabilities. These capabilities include the Pacific Ranges and Facilities, consisting of China Lake Ranges, Ordnance T&E facilities and the Point Mugu Sea Range, aerial and surface target launch and recovery, target test instrumentation and Test and Evaluation aircraft. The Pacific Ranges use China Lake's 1.1 million acres of land and 17,000 square miles of military restricted (R-2508) airspace together with Point Mugu's 125,000 square miles of instrumented sea range and 36,000 square miles of controlled overlying airspace, and airfield and test instrumentation at San Nicolas Island to perform its Test and Evaluation mission. Included in the China Lake ranges is the Electronic Combat Range, which provides outdoor free space developmental and operational testing of airborne electronic warfare systems and tactics against shipboard and land based air defense systems. These ranges perform metric radar, multilateration and optical tracking of test objects; command, control, and destruct for range safety purposes; communications; frequency interference control and analysis; collection processing and display of telemetered data; real-time data processing and display; and the operation of a sub scale aerial target launch capability. Other test capabilities include sled tracks, measurement facilities; propulsion, warhead, environmental, rocket motor, and other missile component test facilities; and gun ranges. This project funds costs that are not chargeable to customers.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Pacific Ranges	64.112	62.917	61.365	0.000	61.365
Articles:	-	-	-	-	-
Description: In accordance with Department of Defense Directive 3200.11., this project funds the overhead/ institutional costs required to sustain the Major Range and Test Facility Base capabilities at the Pacific Ranges and Facilities located at China Lake and Point Mugu, CA. These facilities provide safe, instrumented, controlled open air testing utilizing the Land Range, Sea Range, Electronic Combat Ranges, and San Nicholas Island.					
FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources. These resources include test article instrumentation as well as ground and flight test instrumentation systems, range instrumentation systems and data processing and communication systems required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Sustain maintenance activities associated with five Radar Signal Emulators (RSEs) and					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support		Project (Number/Name) 0653 / NAWC Weapons Division		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
a battlespace shaping capability that requires Special Access Program (SAP) facilities. Initiate maintenance activities to sustain warfare battle shaping capability.						
OCO: Not applicable						
FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources. These resources include test article instrumentation as well as ground and flight test instrumentation systems, range instrumentation systems and data processing and communication systems required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Sustain maintenance activities associated with five Radar Signal Emulators (RSEs) and a battlespace shaping capability that requires Special Access Program (SAP) facilities. Initiate maintenance activities to sustain warfare battle shaping capability.						
FY 2022 OCO Plans: Not applicable						
FY 2021 to FY 2022 Increase/Decrease Statement: Funding decrease from FY 2021 to FY 2022 due to reduction in civilian and contractor workforce.						
Title: Navy Test Wing Pacific		27.118	24.595	22.865	0.000	22.865
Articles:		-	-	-	-	-
Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities of the Naval Test Wing Pacific located at China Lake and Point Mugu, CA. These facilities provide the Navy's principal Pacific test activity for Naval Aviation Systems Command aircraft, engaged in or supporting Test & Evaluation of aircraft, weapons and weapons systems and services in support of Range Surveillance and Clearance, airborne telemetry and optical data collection.						
FY 2021 Plans: Continue to maintain and operate mission essential/core test support aircraft associated with aviation platform and weapon system test and evaluation. Fund civilian labor, travel, transportation, equipment, supplies,						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support		Project (Number/Name) 0653 / NAWC Weapons Division		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Naval Test Wing Pacific operations. FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support aircraft associated with aviation platform and weapon system test and evaluation. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Naval Test Wing Pacific operations. FY 2022 OCO Plans: Not applicable. FY 2021 to FY 2022 Increase/Decrease Statement: Funding Decrease from FY 2021 to FY 2022 due to delay in delivery of C20 and G550 Range Support Aircraft.						
Title: Threat/Target Systems <div>Articles:</div> Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities of the Threat/Target Systems facilities. These facilities provide airborne and seaborne target presentations for test and evaluation. FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources associated with airborne and seaborne target operations required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base target operations. OCO: Not applicable. FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources associated with airborne and seaborne target operations required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base target operations. FY 2022 OCO Plans:		11.804 -	11.713 -	11.986 -	0.000 -	11.986 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support		Project (Number/Name) 0653 / NAWC Weapons Division		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Not applicable.						
FY 2021 to FY 2022 Increase/Decrease Statement: There is no significant change FY 2021 to FY 2022.						
Title: Test and Evaluation Ordnance		3.500	3.590	3.662	0.000	3.662
Articles:		-	-	-	-	-
Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities of the Test and Evaluation Ordnance facilities. These facilities provide test and evaluation of All-Up live ordnance and components.						
FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources associated propulsion, warhead, environmental, rocket motor, and other missile component test facilities required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Major Range and Test Facility Base ordnance test and evaluation operations.						
OCO: Not applicable.						
FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources associated propulsion, warhead, environmental, rocket motor, and other missile component test facilities required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Major Range and Test Facility Base ordnance test and evaluation operations.						
FY 2022 OCO Plans: Not applicable.						
FY 2021 to FY 2022 Increase/Decrease Statement: There are no significant changes from FY 2021 to FY 2022.						
Title: Naval Air Warfare Center Weapons Division Command		49.454	49.926	50.258	0.000	50.258
Articles:		-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 0653 / <i>NAWC Weapons Division</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Description: This project funds the overhead/institutional costs required to sustain the Naval Air Warfare Center Weapons Division Major Range and Test Facility Base Test and Evaluation capabilities.</p> <p>FY 2021 Plans: Continue to reimburse the Command for General and Administration Support services. Continue to fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities, Navy Marine Corps Intranet, and any costs necessary to manage and sustain Major Range and Test Facility Base operations.</p> <p>OCO: Not applicable</p> <p>FY 2022 Base Plans: Continue to reimburse the Command for General and Administration Support services. Continue to fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities, Navy Marine Corps Intranet, and any costs necessary to manage and sustain Major Range and Test Facility Base operations.</p> <p>FY 2022 OCO Plans: Not applicable</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: There is no significant change from FY 2021 to FY 2022.</p>						
Accomplishments/Planned Programs Subtotals		155.988	152.741	150.136	0.000	150.136
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
Not applicable.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>				Project (Number/Name) 0654 / <i>NAWC Acft Division</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0654: <i>NAWC Acft Division</i>	0.000	100.281	101.753	103.943	-	103.943	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides funds for the maintenance and operations of the Naval Air Warfare Center Aircraft Division's Major Range and Test Facility Base capabilities used to conduct test and evaluation of air platforms and associated systems. Naval Air Warfare Center Aircraft Division has extensive airfield, flight test ranges, aircraft systems test facilities and simulation laboratories to support aircraft Research Development Test and Evaluation. This includes 50,000 square miles of airspace, 39,375 square miles of sea space, and 7,950 acres of land space. Product areas include aircraft systems flight test and evaluation, carrier suitability certification, test article preparation, installed system test and evaluation, and modeling and simulation support of the acquisition program test requirements. The Test and Evaluation Group, Patuxent River, performs development and operational test and evaluation of manned and unmanned air vehicle systems, including mission systems, equipment, subsystems, components, and support systems. This project also provides test and evaluation facilities for air-breathing propulsion systems and extensive facilities for conducting both installed and uninstalled aircraft engine development and test and evaluation. This project funds costs that are not chargeable to customers.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Atlantic Ranges	24.871	25.257	25.912	0.000	25.912
Articles:	-	-	-	-	-
<p>Description: In accordance with Department of Defense Directive 3200.11, this project funds the overhead/ institutional costs required to sustain the Major Range and Test Facility Base capabilities associated with the Atlantic Ranges and Facilities and Air Vehicle Modification and Instrumentation. These facilities provide safe, instrumented, controlled flight testing and training in air, sea, and land arenas.</p> <p>FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources. These resources include test article instrumentation and/or modification for Flight Test Aircraft and ground and flight test instrumentation systems, range instrumentation systems and data processing and communication systems required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Continue maintenance for two new control rooms that operate at the Special Access Program (SAP) level, including the IT equipment required to perform test and evaluation operations from the control rooms.</p> <p>OCO:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support		Project (Number/Name) 0654 / NAWC Acft Division		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Not applicable						
FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources. These resources include test article instrumentation and/or modification for Flight Test Aircraft and ground and flight test instrumentation systems, range instrumentation systems and data processing and communication systems required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Continue maintenance for two new control rooms that operate at the Special Access Program (SAP) level, including the IT equipment required to perform test and evaluation operations from the control rooms.						
FY 2022 OCO Plans: Not applicable						
FY 2021 to FY 2022 Increase/Decrease Statement: The increase from FY 2021 to FY 2022 reflects increase in maintenance requirements associated with critical legacy test instrumentation.						
Title: Electromagnetic Environmental Effects and Air Combat Environment Test and Evaluation Facility		21.084	21.794	22.687	0.000	22.687
Articles:		-	-	-	-	-
Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities associated with Electromagnetic Environmental Effects and Air Combat Environment Test and Evaluation Facility. These facilities provide Test and Evaluation support with integrated, interactive, and repeatable synthetic environments and reduce the risk and cost for programs with the use of installed systems tests to include simulation and stimulation tools, techniques and technologies.						
FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Electromagnetic Environmental Effects and Air Combat Environment Test and Evaluation Facility operations.						
OCO:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support		Project (Number/Name) 0654 / NAWC Acft Division		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Not applicable						
FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Electromagnetic Environmental Effects and Air Combat Environment Test and Evaluation Facility operations.						
FY 2022 OCO Plans: Not applicable						
FY 2021 to FY 2022 Increase/Decrease Statement: Funding increase from FY 2021 to FY 2022 supports increase in maintenance requirements associated with Air Combat Environment Test and Evaluation Facility Electronic Warfare test capabilities.						
Title: Propulsion Systems Evaluation Facility		4.587	4.646	4.693	0.000	4.693
Articles:		-	-	-	-	-
Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities of the Propulsion Systems Evaluation Facility. These facilities perform Test and Evaluation of propulsion systems in the laboratories, engine test chambers and component test rigs of the Propulsion Systems Evaluation Facility and the Aircraft Test and Evaluation Facility. Propulsion Systems consists of engines, engine components and accessories.						
FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Propulsion System Evaluation Facility operations.						
OCO: Not applicable.						
FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support		Project (Number/Name) 0654 / NAWC Acft Division		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Propulsion System Evaluation Facility operations. FY 2022 OCO Plans: Not applicable. FY 2021 to FY 2022 Increase/Decrease Statement: There is no significant change from FY 2021 to FY 2022.						
Title: Threat/Target Systems <div>Articles:</div> Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base. Threat/Target Systems operations to provide airborne and seaborne target presentations for test and evaluation. FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources associated with airborne and seaborne target operations required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base target operations. OCO: Not applicable. FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources associated with airborne and seaborne target operations required to meet customer test workload. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base target operations. FY 2022 OCO Plans: Not applicable. FY 2021 to FY 2022 Increase/Decrease Statement: There is no significant change from FY 2021 to FY 2022.		2.329 -	2.376 -	2.362 -	0.000 -	2.362 -
Title: Naval Test Wing Atlantic <div>Articles:</div>		22.757 -	22.747 -	23.203 -	0.000 -	23.203 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support	Project (Number/Name) 0654 / NAWC Acft Division			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities of the Naval Test Wing Atlantic located at NAS Patuxent River, MD. These facilities provide the Navy's principal Atlantic test activity for Naval Aviation Systems Command aircraft, engaged in or supporting Test & Evaluation of aircraft, weapons and weapons systems.</p> <p>FY 2021 Plans: Continue to maintain and operate mission essential/core test support aircraft associated with aviation platform and weapon system test and evaluation. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Naval Test Wing Atlantic operations.</p> <p>OCO: Not applicable.</p> <p>FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support aircraft associated with aviation platform and weapon system test and evaluation. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain Naval Test Wing Atlantic operations.</p> <p>FY 2022 OCO Plans: Not applicable.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The increase from FY 2021 to FY 2022 reflects increase of maintenance costs associated with critical Safety of Flight test equipment.</p>						
<p>Title: Naval Air Warfare Center Aircraft Division Command</p> <p>Articles:</p> <p>Description: This project funds the overhead/institutional costs required to sustain the Naval Air Warfare Center Aircraft Division Major Range and Test Facility Base Test and Evaluation capabilities.</p>		24.653 -	24.933 -	25.086 -	0.000 -	25.086 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 0654 / <i>NAWC Acft Division</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<i>FY 2021 Plans:</i> Continue to reimburse the Command for General and Administrative support services. Continue to fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Naval Air Warfare Center Aircraft Division Range and Test Facility Base operations. OCO: Not applicable <i>FY 2022 Base Plans:</i> Continue to reimburse the Command for General and Administrative support services. Continue to fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Naval Air Warfare Center Aircraft Division Range and Test Facility Base operations. <i>FY 2022 OCO Plans:</i> Not applicable <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> There is no significant change from FY 2021 to FY 2022.						
Accomplishments/Planned Programs Subtotals		100.281	101.753	103.943	0.000	103.943
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
Not applicable.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 2511 / Natural Disaster Relief			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2511: Natural Disaster Relief	0.000	130.444	26.388	26.631	-	26.631	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project was created in response to the 2019 Searles Valley Earthquakes at Naval Weapons Station China Lake to support repairs at Navy MRTFB sites that have been damaged by natural disasters to include earthquakes, wildfires, hurricanes, tornadoes, landslides and floods.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Natural Disaster Relief								130.444	26.388	26.631	0.000	26.631
								Articles:				
FY 2021 Plans:								130.444	26.388	26.631	0.000	26.631
This is a continuation efforts to repair damage caused by natural disasters at Navy MRTFB sites. FY21 repairs will include: Class-3 property; Propulsion Lab Repairs at Cal Tech Sites 1 and 4, the Environmental Test Area and Burro Canyon. Plans also include network fiber optic repairs to instrumentation on North and South Range complexes; Replacement and integration of Optical Systems; Replacement and integration of Communications Systems; and Repairs to Remotely Operated Tracking Radars Instrumentation; Energetic Material mixers; and Laser equipment												
FY 2022 Base Plans:												
This is a continuation efforts to repair damage caused by natural disasters at Navy MRTFB sites. FY22 repairs will include: Class-3 property; Propulsion Lab Repairs at Cal Tech Site 6, the Environmental Test Area and Burro Canyon. Plans also include network fiber optic repairs to instrumentation on North and South Range complexes; Replacement and integration of Optical Systems; Replacement and integration of Communications Systems; and Repairs to Remotely Operated Tracking Radars Instrumentation; Energetic Material mixers; and Laser equipment												
FY 2022 OCO Plans:												
not applicable												
FY 2021 to FY 2022 Increase/Decrease Statement:												
No significant increase from FY 2021 to FY 2022												
Accomplishments/Planned Programs Subtotals								130.444	26.388	26.631	0.000	26.631

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021	
Appropriation/Budget Activity 1319 / 6				R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>				Project (Number/Name) 2511 / <i>Natural Disaster Relief</i>			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• OMN/BSS1: <i>Base Operating Support</i>	9.000	17.954	9.925	-	9.925	-	-	-	-	-	-
• OMN/BSM1: <i>Sustainment, Restoration and Modernization</i>	324.000	217.833	39.881	-	39.881	-	-	-	-	-	-
• OPN/4213: <i>Aircraft Support Equipment</i>	0.000	39.295	50.871	64.674	115.545	-	-	-	-	-	-
Remarks Natural Disaster Relief funding is only a portion of the Line Items listed above.											
D. Acquisition Strategy N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 2921 / Pacific Missile Range Facility			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2921: Pacific Missile Range Facility	0.000	5.394	5.413	5.960	-	5.960	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This program provides continuing maintenance and operations support for Test and Evaluation related capabilities at the Pacific Missile Range Facility located at Barking Sands on Kauai, HI. Pacific Missile Range Facility's Test and Evaluation capabilities include precision radar and telemetry assets, the Mobile At Sea Sensor System, and Stabilized High-accuracy Optical Tracking System. These assets support Navy, Department of Defense, and Missile Defense Agency Test and Evaluation. This project funds costs not chargeable to customers.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Pacific Missile Range Facility Articles: Description: This project funds the overhead/institutional costs required to sustain the Major Range and Test Facility Base capabilities at Pacific Missile Range Facility in accordance with Department of Defense Directive 3200.11. FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources including three precision radars and eight telemetry antennas, the Mobile Aerial Target Support System barge, and the four Optical Systems required to meet customer test requirements. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Reimburse the Command for General and Administrative support services. OCO: Not applicable FY 2022 Base Plans: Continue to maintain and operate mission essential/core test support resources including three precision radars and eight telemetry antennas, the Mobile Aerial Target Support System barge, and the four Optical Systems required to meet customer test requirements. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary								5.394	5.413	5.960	0.000	5.960
								-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 2921 / <i>Pacific Missile Range Facility</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
to manage and sustain the Major Range and Test Facility Base operations. Reimburse the Command for General and Administrative support services.						
<i>FY 2022 OCO Plans:</i> Not applicable						
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funds increase from FY 2021 to FY 2022 to address additional requirements to comply with DoDI 8500.1 Cybersecurity and DoDI 8510.01 Risk Management Framework for DoD Information Technology.						
Accomplishments/Planned Programs Subtotals		5.394	5.413	5.960	0.000	5.960
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy Not applicable.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 2922 / MRTFB Maint & Repair			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2922: MRTFB Maint & Repair	0.000	41.382	37.246	47.081	-	47.081	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project provides funding for the maintenance and repair of the Major Range and Test Facility Base Real Property Maintenance Activities at the Naval Air Warfare Center Weapons Division, the Naval Air Warfare Center Aircraft Division, and the Atlantic Undersea Test and Evaluation Center. Funds mission critical emergency services, recurring maintenance and repair, and major repair projects. In addition it addresses priority items on the Backlog of Maintenance and Repair list.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Facility Maintenance and Repair Articles: Description: Maintenance and repair of the Major Range and Test Facility Base Real Property assets at Naval Air Warfare Center Weapons Division, Naval Air Warfare Center Aircraft Division, and the Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center. FY 2021 Plans: Continue to support mission critical emergency services, recurring maintenance and repair, and minor and major repair efforts at Naval Air Warfare Center Weapons Division, Naval Air Warfare Center Aircraft Division, and the Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center. FY21 budget funds Major Range and Test Facility Base facility to 65% of Department of Defense Facility Sustainment Model v19.1 with \$11M to continue the Naval Air Systems Command Hangar recapitalization efforts and complete Atlantic Undersea Test and Evaluation Center Inspector General Compliance projects to improve perimeter security. OCO: Not applicable. FY 2022 Base Plans: Continue to support mission critical emergency services, recurring maintenance and repair, and minor and major repair efforts at Naval Air Warfare Center Weapons Division, Naval Air Warfare Center Aircraft Division, and the Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center. FY22 budget funds Major Range and Test Facility Base facility to 73% of Department of Defense Facility Sustainment Model v22.2								41.382	37.246	47.081	0.000	47.081
								-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 2922 / <i>MRTFB Maint & Repair</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO
<p>with \$11M to continue the Naval Air Systems Command Hangar recapitalization efforts and continue Atlantic Undersea Test and Evaluation Center Inspector General Compliance projects to improve perimeter security.</p> <p><i>FY 2022 OCO Plans:</i> Not applicable</p> <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funding increase from FY 2021 to FY 2022 increased funding to 73% of the Facility Sustainment Model that addresses the backlog of maintenance and repair projects.</p>					
Accomplishments/Planned Programs Subtotals		41.382	37.246	47.081	0.000
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					
D. Acquisition Strategy					
Not applicable.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 2958 / Cyberspace Activities			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2958: <i>Cyberspace Activities</i>	0.000	0.433	0.439	0.444	-	0.444	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 This project provides funding for cyber requirements for the Major Range and Test Facility Base Real Property at the Atlantic Undersea Test and Evaluation Center. Funds critical cybersecurity upgrades to instrumentation and networks to ensure capabilities are secure and available to support customer test requirements.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Cyberspace Activities <div align="right">Articles:</div> Description: This project funds network and instrumentation compliance with cybersecurity requirements at the Atlantic Undersea Test and Evaluation Center. FY 2021 Plans: Maintain compliance with cybersecurity requirements at Atlantic Undersea Test and Evaluation Center as required to support test and evaluation operations at the Atlantic Undersea Test and Evaluation Center. OCO: Not applicable. FY 2022 Base Plans: Maintain compliance with cybersecurity requirements at Atlantic Undersea Test and Evaluation Center as required to support test and evaluation operations at the Atlantic Undersea Test and Evaluation Center. FY 2022 OCO Plans: Not applicable FY 2021 to FY 2022 Increase/Decrease Statement: No significant change	0.433	0.439	0.444	0.000	0.444
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	0.433	0.439	0.444	0.000	0.444

C. Other Program Funding Summary (\$ in Millions)
 N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>	Project (Number/Name) 2958 / <i>Cyberspace Activities</i>
C. Other Program Funding Summary (\$ in Millions)		
<u>Remarks</u>		
D. Acquisition Strategy		
Not applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 3154 / Nanoose and Dabob Bay Ranges			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3154: Nanoose and Dabob Bay Ranges	0.000	12.714	12.899	14.429	-	14.429	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project provides maintenance and operations support for the Nanoose and Dabob Bay Ranges along with associated support systems to provide Test and Evaluation and readiness assessment services for acquisition programs and the Fleet. Operates ocean-based environment, measurement and support systems. Maintains and repairs systems that measure warfare system performance. Oversees test, training, and measurement facilities, equipment, operations and maintenance processes. Satisfies customer exercise and measurement requirements through the operation of ocean based test and measurement systems. Assures the readiness of systems through the implementation of calibration, maintenance, repair and life cycle processes. Performs exercise planning, exercise interpretation and development of surrogate environments, for system performance measurement. Assists in the design, fabrication and testing of systems for Undersea Warfare applications. Oversees the manning and maintenance of Naval Undersea Warfare Center Division Keyport range craft and range craft systems. This project funds costs not chargeable to customers.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Undersea Ranges Articles: Description: In accordance with Department of Defense Directive 3200.11,this project funds the overhead/ institutional costs required to sustain the Major Range and Test Facility Base capabilities at the Nanoose and Dabob Bay undersea tracking ranges. FY 2021 Plans: Continue to maintain and operate mission essential/core test support resources associated with the unique test environments for Test and Evaluation of undersea weapons, sensors, submarines and other undersea systems required to meet customer test requirements. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Reimburse the Command for General and Administrative support services. OCO: Not applicable. FY 2022 Base Plans:								12.714	12.899	14.429	0.000	14.429
								-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 3154 / <i>Nanoose and Dabob Bay Ranges</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Continue to maintain and operate mission essential/core test support resources associated with the unique test environments for Test and Evaluation of undersea weapons, sensors, submarines and other undersea systems required to meet customer test requirements. Fund civilian labor, travel, transportation, equipment, supplies, communication, equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain the Major Range and Test Facility Base operations. Reimburse the Command for General and Administrative support services. <i>FY 2022 OCO Plans:</i> Not applicable <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funding increase from FY 2021 to FY 2022 to support increase maintenance requirements associated with legacy range instrumentation, support equipment and refurbishment of the Shore Side Cable Trays at the Nanoose and Dabob Bay Ranges.						
Accomplishments/Planned Programs Subtotals		12.714	12.899	14.429	0.000	14.429
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
Not applicable.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605864N / Test & Evaluation Support				Project (Number/Name) 3386 / MRTFB Marine Vessels			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3386: MRTFB Marine Vessels	0.000	17.449	23.623	16.067	-	16.067	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds the overhauls and preventative maintenance of the 23 Major Range and Test Facility Base marine vessels located at Naval Air Warfare Center Weapons Division, Point Mugu, CA, Pacific Missile Range Facility, Honolulu, HI, Naval Undersea Warfare Center Keyport, WA, Naval Air Warfare Center Aircraft Division, Patuxent River, MD, and Atlantic Undersea Test and Evaluation Center. These vessels are used to launch and recover torpedoes, acoustic systems, and other weapons, provide range surveillance and clearance, and can be configured for target services. Overhauls are required to operate ships over 300 tons in compliance with American Bureau of Shipping "Load Line" certification requirements. Major preventative maintenance requiring shipyard support is also performed during these periods to mitigate risks of failures and sustain critical, Hull, Mechanical and Electrical systems to support operations at sea.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: MRTFB Marine Vessels	17.449	23.623	16.067	0.000	16.067
Articles:	-	-	-	-	-
<p>Description: This project funds the overhauls and preventative maintenance of the 23 Major Range and Test Facility Base marine vessels located at Naval Air Warfare Center Weapons Division, Point Mugu, CA, Pacific Missile Range Facility, Barking Sands, Kauai, HI, Naval Undersea Warfare Center Keyport, Nanoose and Dabob Bay Ranges, Keyport, WA, Naval Air Warfare Center Aircraft Division, Patuxent River, MD, and Naval Undersea Warfare Center Detachment Atlantic Undersea Test and Evaluation Center.</p> <p>FY 2021 Plans: Perform overhauls on Naval Undersea Warfare Center Keyport, Atlantic Undersea Test and Evaluation Center, Naval Air Warfare Center Aircraft Division, and Naval Air Warfare Center Weapons Division vessels. Purchase replacement of Naval Air Warfare Center Weapons Division Mobile Ship Target.</p> <p>OCO: Not applicable.</p> <p>FY 2022 Base Plans: Perform overhauls on Naval Undersea Warfare Center Keyport, Atlantic Undersea Test and Evaluation Center, Naval Air Warfare Center Aircraft Division, and Naval Air Warfare Center Weapons Division vessels. Purchase Replacement of Naval Air Warfare Center Weapons Division HM-08.</p> <p>FY 2022 OCO Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605864N / <i>Test & Evaluation Support</i>		Project (Number/Name) 3386 / <i>MRTFB Marine Vessels</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO
Not applicable					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funding Decrease from FY 2021 to FY 2022 reflects completion of the Mobile Ship Target replacement effort, and a decrease in then-year Vessel Service Life Extension Program requirements.					
Accomplishments/Planned Programs Subtotals		17.449	23.623	16.067	0.000
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy Not applicable.					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy</i> / BA 6: <i>RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605865N / <i>Operational Test & Eval Capability</i>							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	24.654	26.092	24.872	-	24.872	-	-	-	-	-	-
0831: <i>OPTEVFOR Support</i>	0.000	22.779	24.058	22.795	-	22.795	-	-	-	-	-	-
2958: <i>Cyberspace Activities</i>	0.000	1.875	2.034	2.077	-	2.077	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program is funded under RESEARCH, DEVELOPMENT, TEST and EVALUATION MANAGEMENT SUPPORT because it supports efforts directed toward sustaining or modernizing facilities and conducting operations required for general research, development, test and evaluation.

Headquartered in Norfolk, Virginia, since inception in 1945. OPTEVFOR serves as the Service Operational Test Agency for the Navy, as well as Marine Corps Aviation. In addition to the headquarters element, OPTEVFOR includes a Fleet-scheduling detachment in San Diego, a detachment supporting the Joint Strike Fighter, Joint Operational Test Team at Edwards, Air Force Base (AFB), CA, and a Surface Warfare Division detachment at Dahlgren, VA. There are four Navy and Marine Corps Squadrons that conduct OT&E under the direction of the Commander. Air Test and Evaluation Squadron ONE (VX-1), located at Patuxent River, MD, is under the administrative control of Commander, Naval Air Forces, Atlantic. Air Test and Evaluation Squadron NINE (VX-9), located at China Lake, CA, is under the administrative control of Commander, Naval Air Forces, Pacific. Marine Operational Test and Evaluation Squadron ONE (VMX-1), located at Yuma, AZ is administratively aligned under the Deputy Commandant for Aviation. Marine Helicopter Squadron ONE (HMX-1), located at Quantico, VA, was historically assigned responsibility for United States Marine Corps (USMC) rotary wing OT. Due to the growth of its principal responsibilities for Presidential transport, most OT&E responsibilities have been realigned to other organizations; however, HMX-1 retains responsibility for OT of aircraft assigned for Presidential transport.

OPTEVFOR is a competency- and warfare-aligned organization. Rather than a strict Fleet military structure, OPTEVFOR has Warfare Division Directors who are fully responsible for delivering test documents ready for the Commander's signature; they are supported by competency division owners, whose job is to ensure the product meets technical requirements and the Commander's standards.

There are seven warfare divisions and a Joint Strike fighter (JSF) Detachment at Edwards AFB that are supported by competency divisions. The warfare divisions include Undersea Warfare (40), Air Warfare (50), Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) (60), Surface Warfare (70), Expeditionary Warfare and Littoral Combat Ship (LCS) (80), and Advanced Programs (90). Each warfare division has a Navy Captain as the division Director with a senior civil servant as the Deputy or a senior civil servant as the division Director and a Navy Commander as the Deputy. The JSF Detachment manages Navy requirements in test and evaluation of the F-35 and is a member of the Joint Operational Test Team.

There are four competency divisions: Policy and Operations (01A), Test Design (01B), Test Planning and Analysis (01C), and Cybersecurity Testing (01D). In addition, the Technical Director (00TD) supports all divisions on technical aspects of the test products. Other support divisions include the Staff Commanding Officer and Administration (10), Chief Information Officer (CIO) (20), Contracts (01K), and the Comptroller (30).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605865N / Operational Test & Eval Capability			
B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	25.145	27.241	25.492	-	25.492
Current President's Budget	24.654	26.092	24.872	-	24.872
Total Adjustments	-0.491	-1.149	-0.620	-	-0.620
• Congressional General Reductions	-	-0.115			
• Congressional Directed Reductions	-	-1.034			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.491	0.000			
• Program Adjustments	0.000	0.000	-0.644	-	-0.644
• Rate/Misc Adjustments	0.000	0.000	0.024	-	0.024
Change Summary Explanation					
The FY2022 funding request was reduced by \$0.644 million to account for the availability of prior year execution balances.					
FY22 Continues the implementation of the COMOPTEVFOR 2025 Strategy to improve the validity of test data and speed at which it is provided to the Navy Acquisition Program Offices and Senior Navy Leadership. Fund civilian labor, travel, transportation, equipment, supplies, communication,equipment maintenance, purchased service contracts, annual utilities and any costs necessary to manage and sustain headquarters operations.					
Technical: N/A					
Schedule: N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605865N / <i>Operational Test & Eval Capability</i>				Project (Number/Name) 0831 / <i>OPTEVFOR Support</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0831: <i>OPTEVFOR Support</i>	0.000	22.779	24.058	22.795	-	22.795	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element (PE) provides Commander, Operational Test and Evaluation Force (COMOPTEVFOR) general support funding for headquarters annual operating expenses and ensures COMOPTEVFOR compliance with Secretary of Defense (SECDEF) and Secretary of the Navy (SECNAV) directives during the conduct of independent operational testing and evaluation. This funding supports planning, testing, and reporting on the operational effectiveness, suitability, and cyber survivability of new and improved systems and recommending fleet usage to the Chief of Naval Operations (CNO). Funding also supports initiatives (including the manpower to execute) that improve COMOPTEVFOR's ability to develop "minimum, adequate" test strategies maximizing efficiencies and minimizing assets required to conduct planned operational testing, thereby driving down overall test and evaluation costs for the Navy. The CNO, as well as acquisition executives and managers at all levels, have a continuing need for expeditious and efficient conduct of Operational Test and Evaluation (OT&E) by COMOPTEVFOR to provide new warfighting capabilities to the fleet. To this end, this funding supports COMOPTEVFOR's continued pursuit of a variety of initiatives aimed at increasing efficiencies in T&E; these initiatives include IT Network, database and decision making technology upgrades, implementation of Integrated Testing and Mission Based Test Design across all programs, and improved staffing and expertise in the areas of DON acquisition processes, Modeling and Simulation, Statistical Studies, Information Assurance, and similar disciplines. All of these initiatives are aimed at improving the quality of test and evaluation, thus ensuring delivery to fleet units of fully tested and capable combat systems. OT&E issues have direct long term Navy-wide implications on the Fleet's readiness and warfighting capability. Rapid advances in technology, changes in fleet tactics, and increased complexity of weapons systems and platforms have created an increased need for technical and operational analyses that are sophisticated and timely in order to ensure an optimal return on investment of Navy resources.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: OPTEVFOR SUPPORT	22.779	24.058	22.795	0.000	22.795
Articles:	-	-	-	-	-
Description: Funding in this project funds the civilian salaries and operating costs for the Commander, Operational Test and Evaluation Force (COMOPTEVFOR). In addition, it supports several initiatives aimed at increasing efficiencies in Test and Evaluation (T&E) to facilitate the Navy's ability to deliver warfighting capability to the fleet at the speed of relevance. These initiatives include IT Network, database and decision making technology upgrades; implementation of Integrated Testing and Mission Based Test Design across all programs; and improved staffing and expertise in the areas of DON acquisition processes, Modeling and Simulation, Statistical Studies, Information Assurance, and related disciplines. All of these initiatives are aimed at improving the quality of testing and evaluation, thus ensuring delivery to fleet units of appropriately tested and capable combat capabilities.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605865N / Operational Test & Eval Capability	Project (Number/Name) 0831 / OPTEVFOR Support				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>FY 2021 Plans:</p> <p>Continue to maintain and operate mission essential/core test support resources.</p> <ul style="list-style-type: none">- This project will fund civilian salaries and operating costs for COMOPTEVOR.- Continue efforts to enhance and improve test processes and products in support of increasing the value of OT&E; tailoring of processes and methods to ensure relevance for adaptive acquisition pathways and Agile IT systems will continue to mature.- Continue to support Warfare Capability Baseline (WCB) assessments and report on the Navy's capability across all platforms, networks, weapons, or sensors. COMOPTEVFOR coordinates with Warfighting Development Centers and Systems Command tactical and technical experts to transition Operational Test data and insights into kill chain knowledge to enhance warfighting readiness.- Analyze performance across warfare domains; continue to collaborate across warfare domains to maximize lessons learned, share resources, gain efficiencies in testing, and provide value to the Fleet, Warfighting Development Centers, and acquisition decision makers.- Continue the application of COMOPTEVFOR cyber survivability expertise to improve Navy cybersecurity posture and develop enterprise-wide, efficient and effective cyber testing.-- Complete Network Modernization Initiative to update the deteriorating infrastructure and equipment within the COMOPTEVFOR building to include:<ul style="list-style-type: none">1. Replacement of end-of-life equipment2. Replacement of switches and routers3. Upgrade of system cabling throughout all spaces4. Virtualization and remote access solutions <p>FY 2022 Base Plans:</p> <ul style="list-style-type: none">- This project will fund civilian salaries and operating costs for COMOPTEVOR.- Continue efforts to enhance and improve test processes and products in support of increasing the value of OT&E; tailoring of processes and methods to ensure relevance for adaptive acquisition pathways and Agile IT systems will continue to mature.- Continue to support Warfare Capability Baseline (WCB) assessments and report on the Navy's capability across all platforms, networks, weapons, or sensors. The WCB is a Fleet-prioritized system-of-systems technical feasibility assessment of kill chains and their supporting effects chains based on real world data, which includes Operational Test data, Fleet data, and Developmental Test data collected in representative operational environments and configurations. These data further include modeling and simulation data accredited by COMOPTEVFOR for use in operational evaluations. COMOPTEVFOR coordinates with Warfighting							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605865N / <i>Operational Test & Eval Capability</i>		Project (Number/Name) 0831 / <i>OPTEVFOR Support</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Development Centers and Systems Command tactical and technical experts to transition Operational Test data and insights into kill chain knowledge to enhance warfighting readiness. - Analyze performance across warfare domains; continue to collaborate across warfare domains to maximize lessons learned, share resources, gain efficiencies in testing, and provide value to the Fleet, Warfighting Development Centers, and acquisition decision makers - Implement the Six Core Test Principles for Adaptive, Relevant Testing through an emphasis on Capabilities Based Test and Evaluation; leveraging Mission Based Test Design (MBTD) throughout all test phases of test programs to facilitate early learning to accelerate delivery of combat capabilities to the Fleet. - Continue and expand the application of COMOPTEVFOR cyber survivability expertise to improve Navy cybersecurity posture and develop enterprise-wide, efficient and effective cyber testing; increase the fidelity and capacity for system, system-of-systems, and platform level cyber survivability evaluations, including non-IP based vulnerabilities, while continuing to provide Combatant Commander and Fleet exercise cyber assessments; integrate COTF results into Navy Enterprise cybersecurity risk-based decision making. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Funding decrease from FY 2021 to FY 2022 is due to the completion of FY21 effort to transition Network Modernization initiative.						
Accomplishments/Planned Programs Subtotals		22.779	24.058	22.795	0.000	22.795
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
COMOPTEVFOR leverages a Firm Fixed Price, multi-award contract for services.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605865N / Operational Test & Eval Capability				Project (Number/Name) 2958 / Cyberspace Activities			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2958: Cyberspace Activities	0.000	1.875	2.034	2.077	-	2.077	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Note cyber pure project												
A. Mission Description and Budget Item Justification This project funds the civilian salaries and support associated maintenance and sustainment of cyber hygiene and resiliency of network infrastructure, as well as enterprise IT services for COMOPTEVFOR operational support networks. Additionally, these funds ensure the hardware and software required to maintain is in compliance with cybersecurity directives that support command operations as required. The Cyber Pure funding under this project directly supports the Assessment & Authorization (A&A) of COMOPTEVFOR IT systems and the monthly patching and scanning, and reauthorization required for continuous monitoring.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Cyberspace Activities Articles: Description: Funding will support maintenance of cyber hygiene and resiliency of network infrastructure and enterprise IT services for COMOPTEVFOR operational support networks, as well as the hardware and software required to maintain compliance with cybersecurity directives. Funding ensures ability of COMOPTEVFOR network engineers to comply with cybersecurity requirements for the networks used in support of command operations as required in DoD Instruction (DoDI) 8510.01, Risk Management Framework (RMF) for DoD Information Technology (IT) and DoDI 8500.01, Cybersecurity. Facilitates the monthly network patching and scanning required to protect networks from cyber-attacks and intrusions. FY 2021 Plans: Maintain compliance with cybersecurity requirements associated with Commander, Operational Test and Evaluation Force's (COMOPTEVFOR) information technology and associated networks. Conduct required vulnerability scans and install necessary network patches to ensure cybersecurity of critical network infrastructure. FY 2022 Base Plans:								1.875	2.034	2.077	0.000	2.077
								-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605865N / <i>Operational Test & Eval Ca</i> <i>pability</i>		Project (Number/Name) 2958 / <i>Cyberspace Activities</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Maintain compliance with cybersecurity requirements associated with Commander, Operational Test and Evaluation Force's information technology and associated networks. Conduct required vulnerability scans and install necessary network patches to ensure cybersecurity of critical network infrastructure. <i>FY 2022 OCO Plans:</i> N/A <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> No appreciable change from FY2021 to FY2022.						
Accomplishments/Planned Programs Subtotals		1.875	2.034	2.077	0.000	2.077
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605866N / <i>Navy Space & Electr Warfare Supt</i>							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	12.217	15.695	17.653	-	17.653	-	-	-	-	-	-
0706: <i>EMC & RF Mgmt</i>	0.000	2.199	3.163	2.564	-	2.564	-	-	-	-	-	-
3239: <i>Real-Time Spectrum Operations (RTSO)</i>	0.000	10.018	12.532	15.089	-	15.089	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Project 0706, Electromagnetic Compatibility (EMC) and Radio Frequency (RF) Management Program. This project develops tools, processes, EMC Criteria for Navy Systems, and algorithms to identify and mitigate EMI sources for Navy systems and platforms.

Project 3239, The Real-Time Spectrum Operations (RTSO) effort researches and develops software to automate analyses of the Electromagnetic (EM) Environmental Effects (E3) between shipboard transmitters and receivers on ships and the interactions of the EM systems within the other systems installed on units within a strike group. RTSO develops and updates numerical models, algorithms, data bases, and software which aids and supports warfighter spectrum planning, sensing and monitoring characterization and prediction, and managing and maneuvering within the EM spectrum.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	12.652	15.787	18.890	-	18.890
Current President's Budget	12.217	15.695	17.653	-	17.653
Total Adjustments	-0.435	-0.092	-1.237	-	-1.237
• Congressional General Reductions	-	-0.092			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.435	0.000			
• Program Adjustments	0.000	0.000	-1.036	-	-1.036
• Rate/Misc Adjustments	0.000	0.000	-0.201	-	-0.201

Change Summary Explanation

FUNDING:

The FY2022 funding request was reduced by \$.7 million for Total Force Manpower savings.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt	
<p>Project 3239, Real-Time Spectrum Operations (RTSO) (+\$2.557M)</p> <p>- FY21 to FY22 increase is associated with the testing, integration and transition of the RTSO Own Force Monitoring (OFM) Deployable Mission Module (DMM) capability to meet critical Fleet requirements for Emissions Control (EMCON) validation and Tactical Situation (TACSIT) management on all non-capable ships. The RTSO OFM DMM will be developed and fielded to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO Requirements Document Letter dated 4 Dec 2017.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt				Project (Number/Name) 0706 / EMC & RF Mgmt			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0706: EMC & RF Mgmt	0.000	2.199	3.163	2.564	-	2.564	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Electromagnetic Compatibility (EMC) and Radio Frequency (RF) Management Program. This project develops tools, processes, and algorithms to identify and mitigate EMI sources for Navy systems and platforms.												
(a) It will support the research, development, testing, and evaluation of electromagnetic compatibility criteria and frequency management to support afloat electromagnetic spectrum operations. The RF EMC criteria will be enhanced to include new RF systems and to comply with fleet operational requirements and streamline Strike Force frequency management processes. It will provide automated Spectrum Management (SM) compatibility criteria for development of operational task communication and radar/weapon plans to support fleet deployments, exercises, and contingency operations. It will provide identification and mitigation of EMI in Navy, North Atlantic Treaty Organization (NATO), Allied, Ashore and Joint Combat Operations. It will provide analysis related to spectrum reallocation proposals to assess impacts on Navy operations and systems, as well as for the Spectrum Supportability Risk Assessments. It will assist numbered fleet commands and DoD commands with determination of EMC criteria and processes to maximize ships' ability to operate in contested and congested environments.												
(b) It will support the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) to identify, engineer, and evaluate effectiveness of potential EMI corrections. The program also characterizes and quantifies the operational impact of EMI problems on system's mission performance.												
(c) It will support the Nuclear Electromagnetic Pulse (EMP) Survivability Program. The program assesses the EMP survivability of all mission critical systems and funds development of a hardness assurance and maintenance program. It will develop improved modeling capability to reduce hardness validation costs at delivery and over the lifetime of the system/platform. The program develops new and updated design criteria, test methodology, test limits, and survivability validation procedures for all Navy systems, ships, submarines and shore facilities.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: RF Management							0.300	0.415	0.404	0.000	0.404	
							Articles: -	-	-	-	-	
FY 2021 Plans:												
- Provide engineering analyses and recommendations for updating Littoral Radiation Restrictions for numbered fleet areas of responsibility. Document the worldwide Littoral Radiation Restrictions and provide to the fleet and to RTSO.												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt		Project (Number/Name) 0706 / EMC & RF Mgmt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Conduct engineering analyses and testing to determine electromagnetic compatibility (EMC) criteria for Navy assets.</div> <div>- Document EMC criteria in NAVSEA Operational Publication S9407-AA-GYD-010/(S) OP-3840 "Electromagnetic Compatibility Criteria for Navy Systems (U)".</div> <div>- Revise and update Standing Operational Tasking (OPTASK) Communications Plans to accommodate Navy equipment and host nation regulations.</div> <div>- Provide impact assessments and analysis for new spectrum-dependent equipment, spectrum policy updates, and changing geopolitical conditions.</div> <div>- Research interactions and leveraging opportunities between various data sources for spectrum data; provide the Navy layer input for joint restricted frequency lists, and equipment, platform, and other databases.</div> <div>- Serve as the Navy's subject matter experts for spectrum de-confliction, EMC, and tactical spectrum management within Navy, DoD, and external components.</div> <div>FY 2022 Base Plans:</div> <div>- Provide engineering analyses and recommendations for updating Littoral Radiation Restrictions for numbered fleet areas of responsibility. Document the worldwide Littoral Radiation Restrictions and provide to the fleet and to RTSO.</div> <div>- Conduct engineering analyses and testing to determine electromagnetic compatibility (EMC) criteria for Navy assets.</div> <div>- Document EMC criteria in NAVSEA Operational Publication S9407-AA-GYD-010/(S) OP-3840 "Electromagnetic Compatibility Criteria for Navy Systems (U)".</div> <div>- Revise and update Standing Operational Tasking (OPTASK) Communications Plans to accommodate Navy equipment and host nation regulations.</div> <div>- Integrate Navy spectrum management requirements into joint and DoD architectures and processes.</div> <div>FY 2022 OCO Plans:</div> <div>N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement:</div> <div>Decrease of \$0.011M from FY 21 to FY 22 is due to FY 21 completion of development of EMC criteria for one of the newly fielded radar systems aboard ship.</div>						
Title: Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP)		1.239	1.803	1.225	0.000	1.225
Articles:		-	-	-	-	-
FY 2021 Plans:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt	Project (Number/Name) 0706 / EMC & RF Mgmt				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Quantify and begin to characterize technical impacts of new Electromagnetic Interference (EMI) problems reported and predicted from FY18 to present.</div> <div>- Analyze and evaluate effectiveness of radar signal processing algorithms for the mitigation of current and future electromagnetic environment waveforms.</div> <div>- Analyze and evaluate effectiveness of forward error correction algorithms for the mitigation of current and future electromagnetic environment waveforms.</div> <div>- Continue to develop new EMI fixes and evaluate their effectiveness in mitigating shipboard EMI.</div> <div>- Continue evaluation of Unmanned Bit Error Rate Test (UBERT) capability and research applicability on legacy, EBEM SATCOM modem to Ship EMC Certification.</div> <div>- Develop Unmanned Bit Error Rate Test (UBERT) capability for adaptive, shipboard EBEM replacement modem.</div> <div>- Develop autonomous EMI detection capabilities for radar and communication systems in order to reduce test time and quantify likelihood over extended periods, like ship underway periods or operational deployments.</div> <div>- Develop high frequency (HF) intermodulation (IMI) test methods and standards, and develop alternate test methods applicable to digital HF receivers.</div> <div>FY 2022 Base Plans:<div>- Continue characterization of technical impacts of new, high priority shipboard Electromagnetic Interference (EMI) problems reported and predicted from to date.</div><div>- Develop new EMI fixes and evaluate their effectiveness in mitigating shipboard EMI.</div><div>- Implement Unmanned Bit Error Rate Test (UBERT) capability into Ship EMC Certification to characterize EMI impacts on SATCOM links.</div><div>- Evaluate Unmanned Bit Error Rate Test (UBERT) capability for adaptive, shipboard EBEM replacement modem.</div><div>- Evaluate and improve autonomous EMI detection capabilities for radar and communication systems in order to reduce test time and quantify likelihood over extended periods, like ship underway periods or operational deployments.</div><div>- Continue development and implementation of high frequency (HF) intermodulation (IMI) test methods and standards, and alternate test methods applicable to digital HF receivers.</div></div> <div>FY 2022 OCO Plans: N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement:</div>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt		Project (Number/Name) 0706 / EMC & RF Mgmt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY21 - FY22 decrease provides less engineering hours supporting core capability to achieve electromagnetic compatibility (EMC) by effective prevention, identification, characterization, resolution, and control of electromagnetic interference (EMI) impacting U.S. Naval surface ships, submarines, ashore commands, and strike groups in joint and littoral operations.						
Title: Electromagnetic Pulse (EMP) Survivability		0.660	0.945	0.935	0.000	0.935
Articles:		-	-	-	-	-
FY 2021 Plans:						
- Complete computational electromagnetic (CEM) modeling capability to assist in ship hardness design.						
- Continue developing new Hybrid-Based High Altitude Electrometric Pulse (HEMP) evaluation technique to evaluate HEMP hardness of navy ships via a low-cost, low potential for equipment damage and quicker method of analysis (decreasing costs in the performance of tests).						
- Continue investigating small, inexpensive measurement devices for incorporation into Hybrid-Based HEMP evaluation methodology.						
- Finish developing instrumentation and data acquisition capability in support of the HEMP Ashore Test Facility [i.e., Naval Ordinance Transient Electromagnetic Simulator].						
- Refine design criteria, test methodology, test limits, and survivability validation procedures for Navy systems, ships, submarines and shore facilities.						
- Perform research and development of integrated solutions for EMP hardening. Investigate improvements to the cable shield ground adapters, terminal protection devices and cable maintenance procedures.						
FY 2022 Base Plans:						
- Continue developing new Hybrid-Based High Altitude Electrometric Pulse (HEMP) evaluation technique to evaluate HEMP hardness of navy ships via a low-cost, low potential for equipment damage and quicker method of analysis (decreasing costs in the performance of tests).						
- Continue investigating small, inexpensive measurement devices for incorporation into Hybrid-Based HEMP evaluation methodology.						
- Investigate Cable Shield Transfer Impedance for evaluating shipboard cables in-situ.						
- Refine research and development of integrated solutions for EMP hardening.						
- Complete Cooperative Research And Development Agreement (CRADA) for concepts to repair cable shield ground adapters in-situ, terminal protection devices and cable maintenance procedures.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt		Project (Number/Name) 0706 / EMC & RF Mgmt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Initialize validation of computational electromagnetic (CEM) modeling capability to assist in ship hardness design. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Minimal decrease from FY21 - FY22 of -0.01 is due to reduced costs associated with developing data acquisition capability.						
Accomplishments/Planned Programs Subtotals		2.199	3.163	2.564	0.000	2.564
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfar e Supt				Project (Number/Name) 3239 / Real-Time Spectrum Operations (RTSO)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3239: Real-Time Spectrum Operations (RTSO)	0.000	10.018	12.532	15.089	-	15.089	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Real-Time Spectrum Operations (RTSO) develops tools, processes, and algorithms to conduct spectrum planning, sense and monitor, characterize and predict Electromagnetic Environmental Effects(E3), and manage and maneuver to avoid and mitigate Electromagnetic Interference (EMI) and Electromagnetic (EM) Vulnerability for Navy systems and platforms.

RTSO supports Navy and Marine Corps Electromagnetic Spectrum Operations for global spectrum usage and allocation planning. The effort researches the EM E3 between shipboard transmitters and receivers on ships and the interactions of the EM systems within the other systems installed on units within a strike group. RTSO will develop a capability to sense and monitor shipboard EM Spectrum Usage and validate the spectrum plan to achieve Emissions Control (EMCON) within the strike group. The effort will validate and display spectrum plan compliance with a spectrum common operational picture. This EM spectrum Management Aid with own force monitoring sensor input supports Battlespace Awareness and Information Operations. These self-awareness and validation capabilities will greatly enhance the Navy's ability to perform Command and Control of the EM Spectrum warfighting domain.

FY 2022 will focus on the testing, integration and transition of the RTSO Own Force Monitoring (OFM) Deployable Mission Module (DMM) capability to meet critical Fleet requirements for Emissions Control (EMCON) validation and Tactical Situation (TACSIT) management on all non-capable ships.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Real-Time Spectrum Operations (RTSO)	10.018	12.532	15.089	0.000	15.089
Articles:	-	-	-	-	-
FY 2021 Plans: <ul style="list-style-type: none"> - Continue to research, develop, enhance and refine Cloud architecture, Spectrum Common Operational Picture (COP), Live data, Detect, counter-detect (1-to-1), Time slide, and Network nodes. - Continue research, development, testing, and evaluation for own-force spectrum monitoring capabilities, including new commercial and military sensors, antenna, and network connections. - Continue research and development of proof-of-concept capabilities for spectrum mission planning decision aids and intelligent sectoring/cut-outs for radiating systems 					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt	Project (Number/Name) 3239 / Real-Time Spectrum Operations (RTSO)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Continue research and development efforts for models to estimate effective RF performance ranges of spectrum dependent systems in the complex electromagnetic environment (one-on-one and multi-on-one effects)</div> <div>- Continue to refine analysis with Ship Signal Exploitation Equipment (SSEE) Family of Systems (FoS) Programs of Records to identify long-term hardware solution set for deployment for SSEE enabled platforms as well as non-SSEE enabled platforms.</div> <div>- Continue research on RTSO support on Tactical Airborne and Submarine platforms.</div> <div>- Continue Limited Objective Experiments (LOEs) to demonstrate incremental capability to Fleet users.</div> <div>- Continue development of an architecture that supports mission module delivery of RTSO capability on all platforms</div> <div>FY 2022 Base Plans:</div> <div>- FY22 increase is associated with testing, integration and transition efforts in advance of deployment of the RTSO Own Force Monitoring (OFM) Deployable Mission Module (DMM) capability to meet critical Fleet requirements for Emissions Control (EMCON) validation and Tactical Situation (TACSIT) management on all non-capable ships. The RTSO OFM DMM will be developed and fielded to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO Requirements Document Letter dated 4 Dec 2017.</div> <div>- Continue to research, develop, enhance and refine Cloud architecture, Spectrum Common Operational Picture (COP), Live data, Detect, counter-detect (1-to-1), Time slide, and Network nodes.</div> <div>- Continue research, development, testing, and evaluation for own-force spectrum monitoring capabilities, including commercial and military sensors, antenna, and network connections.</div> <div>- Continue research and development of proof-of-concept capabilities for spectrum mission planning decision aids and intelligent sectoring/cut-outs for radiating systems.</div> <div>- Continue research and development efforts for models to estimate effective Radio Frequency (RF) performance ranges of spectrum dependent systems in the complex electromagnetic environment (one-on-one and multi-on-one effects).</div> <div>- Continue to refine analysis with SSEE Family of Systems Programs of Record to identify long-term hardware solution set for deployment on SSEE enabled platforms as well as non-SSEE enabled platforms.</div> <div>- Finalize testing, integration and transition efforts in advance of deployment of the RTSO Own Force Monitoring (OFM) Deployable Mission Module (DMM) capability to meet critical Fleet requirements for Emissions Control (EMCON) validation and Tactical Situation (TACSIT) management on all non-capable ships.</div> <div>- Continue LOEs to demonstrate incremental capability to Fleet users.</div>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605866N / Navy Space & Electr Warfare Supt		Project (Number/Name) 3239 / Real-Time Spectrum Operations (RTSO)		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue development of an architecture that supports mission module delivery of RTSO capability on all platforms. - Investigate external data sources from other Navy Programs of Record to provide improved EM spectrum awareness. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: - FY22 increase is associated with testing, integration and transition efforts in advance of deployment of the RTSO Own Force Monitoring (OFM) Deployable Mission Module (DMM) capability to meet critical Fleet requirements for Emissions Control (EMCON) validation and Tactical Situation (TACSIT) management on all non-capable ships. The RTSO OFM DMM will be developed and fielded to meet validated OFM capability requirements outlined in U.S. Fleet Forces Command / Commander, U.S. Pacific Fleet RTSO Requirements Document Letter dated 4 Dec 2017.						
Accomplishments/Planned Programs Subtotals		10.018	12.532	15.089	0.000	15.089
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy Date: May 2021

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605867N / SEW SURVEILLANCE/RECONNAISSANCE SUPPORT
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	8.402	8.559	8.065	-	8.065	-	-	-	-	-	-
1034: TAC SAT Recon Office	0.000	8.402	8.559	8.065	-	8.065	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

(U//FOUO) Link Crimson (Navy Tactical Exploitation of National Capabilities (TENCAP)) is a congressionally directed program to rapidly develop (12-18 months) systems, processes, and training that leverages and exploits National Technical Means (NTM) and Intelligence Community (IC) resources to meet fleet tactical warfighting gaps. This is done through innovative research and development of capabilities aligned with Navy Programs of Record (PoR), while influencing national systems support and development. These efforts include advanced sensors, platform and ground processing, and integrated national-to-tactical information fusion capabilities. Link Crimson supports all Navy mission areas, including Anti-Submarine Warfare (ASW), Integrated Air and Missile Defense, Mine Warfare (MIW), Power projection/Precision Strike, Maritime Domain Awareness (MDA), and Intelligence, Surveillance, and Reconnaissance (ISR), in support of the Navy's Information Dominance pillars: Assured Command and Control (AC2), Battlespace Awareness (BA) and Integrated Fires (IF).

(U//FOUO) This program is funded under Budget Activity 6 because it supports the operations and installations required for general research and development. Program baseline addresses research and development on specific capabilities to support these mission areas such as signals collection and exploitation, acoustic and electronic signal detection, countering Unmanned Air Systems, Processing, Exploitation, and Dissemination (PED) processes, Commercial Maritime Navigation Radar (CMNR) detection and exploitation, open-ocean surveillance, and hostile threat geo-location. Link Crimson fields both prototypes to demonstrate new capabilities in real world environments in coordination with operational users, and develops warfighting capabilities for insertion into Navy, joint, and national agency programs of record. Additional detailed information is available at higher levels of classification.

(U//FOUO) Project 1034: Established to exploit all National and Service sensor systems to improve tactical support to Fleet operational commanders. Project also supports equipment upgrades, training and Fleet exercises which provide the venue for testing modifications to existing programs.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	8.402	8.559	8.729	-	8.729
Current President's Budget	8.402	8.559	8.065	-	8.065
Total Adjustments	0.000	0.000	-0.664	-	-0.664
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	0.000	-0.500	-	-0.500
• Rate/Misc Adjustments	0.000	0.000	-0.164	-	-0.164

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0605867N / SEW SURVEILLANCE/RECONNAISSANCE SUPPORT
<p><u>Change Summary Explanation</u></p> <p>The FY2022 funding request was reduced by \$.5 million to account for the availability of prior year execution balances.</p> <p>Technical: Not applicable. Schedule: Not applicable.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605867N / SEW SURVEILLANCE/REC ONNAISSANCE SUPPORT				Project (Number/Name) 1034 / TAC SAT Recon Office			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1034: TAC SAT Recon Office	0.000	8.402	8.559	8.065	-	8.065	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

(U//FOUO) Link Crimson (Navy Tactical Exploitation of National Capabilities (TENCAP)) is a congressionally directed program to rapidly develop (12-18 months) systems, processes, and training that leverages and exploits National Technical Means (NTM) and Intelligence Community (IC) resources to meet fleet tactical warfighting gaps. This is done through innovative research and development of capabilities aligned with Navy Programs of Record (PoR), while influencing national systems support and development. These efforts include advanced sensors, platform and ground processing, and integrated national-to-tactical information fusion capabilities. Link Crimson supports all Navy mission areas, including Anti-Submarine Warfare (ASW), Integrated Air and Missile Defense, Mine Warfare (MIW), Power projection/Precision Strike, Maritime Domain Awareness (MDA), and Intelligence, Surveillance, and Reconnaissance (ISR), in support of the Navy's Information Dominance pillars: Assured Command and Control (AC2), Battlespace Awareness (BA) and Integrated Fires (IF).

(U//FOUO) This program is funded under Budget Activity 6 because it supports the operations and installations required for general research and development. Program baseline addresses research and development on specific capabilities to support these mission areas such as signals collection and exploitation, acoustic and electronic signal detection, countering Unmanned Air Systems, Processing, Exploitation, and Dissemination (PED) processes, Commercial Maritime Navigation Radar (CMNR) detection and exploitation, open-ocean surveillance, and hostile threat geo-location. Link Crimson fields both prototypes to demonstrate new capabilities in real world environments in coordination with operational users, and develops warfighting capabilities for insertion into Navy, joint, and national agency programs of record. Additional detailed information is available at higher levels of classification.

(U//FOUO) Project 1034: Established to exploit all National and Service sensor systems to improve tactical support to Fleet operational commanders. Project also supports equipment upgrades, training and Fleet exercises which provide the venue for testing modifications to existing programs.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Assured Command and Control	0.627	0.621	0.630	0.000	0.630
Articles:	-	-	-	-	-
Description: (U//FOUO) The Navy must assure its ability to command and control forces. This requires capabilities that enable commanders to rapidly and with certainty: 1) exchange orders and responses with subordinates; 2) understand the disposition of friendly and adversarial forces, as well as uninvolved/neutral elements in the area of operations; 3) have access to target quality intelligence at the right time to conduct strikes as part of the joint force; and 4) assess the result of those strikes. Sensing the environment, understanding our adversaries, and operating and defending our communications and networked systems are inextricably linked to the assurance of C2.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605867N / SEW SURVEILLANCE/REC ONNAISSANCE SUPPORT		Project (Number/Name) 1034 / TAC SAT Recon Office		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2021 Plans: N/A						
FY 2022 Base Plans: N/A						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: (U//FOUO) The change from FY2021 to FY2022 resources in this pillar will allow Navy TENCAP to increase our capability development in the area of Assured Command and Control and better satisfy Fleet operational priorities and influence NTM requirements.						
Title: Battlespace Awareness		5.737	5.900	4.389	0.000	4.389
Articles:		-	-	-	-	-
Description: (U//FOUO) This is the traditional mission of the Navy's Information Warfare and the constituent components of meteorology, oceanography, intelligence, cryptology, communications, networks, space, and electronic warfare (EW). It includes: 1) persistent surveillance of the maritime and information battlespace; 2) knowledge of how to employ existing and emerging collection capabilities to great effectiveness to gather critical intelligence; 3) penetrating knowledge of the capabilities and intent of our adversaries to hold our successful operations at risk; and 4) expertise within the electromagnetic spectrum. Automation in data extraction and alignment and machine learning algorithms can significantly enhance the human analyst's ability to achieve battlespace awareness in the face of vast data repositories and numerous collection platforms/opportunities.						
FY 2021 Plans: N/A						
FY 2022 Base Plans: N/A						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605867N / SEW SURVEILLANCE/REC ONNAISSANCE SUPPORT	Project (Number/Name) 1034 / TAC SAT Recon Office				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
(U//FOUO) The change from FY2021 to FY2022 resources in this pillar will decrease Navy TENCAP ability to expand our capability development in the area of Battle Space Awareness and better satisfy Fleet operational priorities and influence NTM requirements.							
Title: Integrated Fires			2.038	2.038	3.046	0.000	3.046
Articles:			-	-	-	-	-
Description: (U//FOUO) Integration of the right combination of kinetic and/or non-kinetic fires to achieve the desired effect on the target and on the adversary's decision calculus requires: 1) in-depth understanding of the adversary's centers of gravity and vulnerabilities; 2) the right fidelity of the target's location, movement, and window of vulnerability; 3) commander's confidence that the weapon is postured to achieve the desired effect; and 4) the ability to provide this information to the weapon system(s) and weapon release authority(ies) before the target can employ effective defensive measures.							
FY 2021 Plans: N/A							
FY 2022 Base Plans: N/A							
FY 2022 OCO Plans: N/A							
FY 2021 to FY 2022 Increase/Decrease Statement: (U//FOUO) The realignment in FY2021 to FY2022 resources in this pillar will allow Navy TENCAP to increase our capability development in the area of Integrated Fires and better satisfy Fleet operational priorities and influence National Technical Means (NTM) requirements.							
Accomplishments/Planned Programs Subtotals			8.402	8.559	8.065	0.000	8.065
C. Other Program Funding Summary (\$ in Millions) N/A							
Remarks							
D. Acquisition Strategy Not applicable							

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	33.809	37.749	47.042	-	47.042	-	-	-	-	-	-
0030: Studies & Analysis/MC	0.000	4.034	2.348	2.732	-	2.732	-	-	-	-	-	-
0033: OT&E Support	0.000	14.194	14.906	15.338	-	15.338	-	-	-	-	-	-
2330: Chem Bio Consequence Mgmt	0.000	1.530	1.620	1.645	-	1.645	-	-	-	-	-	-
3009: Marine Corps Wargaming Capability	0.000	11.027	15.000	23.518	-	23.518	-	-	-	-	-	-
3783: Information Environment Strategy, Policy and Governance	0.000	3.024	3.875	3.809	-	3.809	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element (PE) provides the analytical foundation for the Marine Corps Studies System (MCSS), including mandated Mission Area Analyses and Cost and Operational Effectiveness Analyses. It also includes capabilities that facilitate force development, war plan assessment, and concept and combat development. The MCSS is the front end of the Marine Corps' acquisition system. This PE also supports the material acquisition process as follows: managing the Marine Corps Operational Test and Evaluations (OT&E); providing Chem Bio Consequence Management of capabilities for Weapons of Mass Destruction (WMD) incident response forces; development of the Wargaming capability; and conducting analyses to inform the development and integration of Marine Corps Information Environment Operations (IE Ops).

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	34.734	42.749	33.145	-	33.145
Current President's Budget	33.809	37.749	47.042	-	47.042
Total Adjustments	-0.925	-5.000	13.897	-	13.897
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.925	0.000			
• Program Adjustments	0.000	0.000	7.156	-	7.156
• Rate/Misc Adjustments	0.000	0.000	6.741	-	6.741

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt	
<p><u>Change Summary Explanation</u></p> <p>The net increase of \$9.293M from FY 2021 to FY 2022 is primarily due to Wargaming capability Phase II prototyping and the final evaluation of the Phase II prototype. The extended Period of Performance will synchronize with the MILCON construction completion.</p> <p>The FY 2022 funding request was adjusted by \$0.121M to account for the availability of prior year execution balances.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt				Project (Number/Name) 0030 / Studies & Analysis/MC			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0030: Studies & Analysis/MC	0.000	4.034	2.348	2.732	-	2.732	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Marine Corps Requirements Oversight Council (MROC) established Operations Analysis Directorate (OAD) as the sole operations research, analytic support, and studies management program for the Marine Corps Study System (MCSS). MCSS analysis is achieving greater efficiency, productivity, and innovation through operations research methodologies such as: operational analysis, statistical analysis, multi-objective decision methods, optimization, cost analysis, and a wide range of computer-based models and combat simulations insuring the optimization of resources now and in the future. Analyses spans the spectrum of conflict in a Joint, Interagency, Intergovernmental, and Multinational (JIIM) context to inform critical senior level decision makers of current and future national security issues and provides unique and distinct analytic capabilities that enable the collaboration and sharing of analyses that reduces the duplication of topics that are of broad interest. MCSS is an integral part of the Marine Corps and Joint Chiefs decision-making processes to organize, man, train, equip, sustain, and transform resources from the current to the future force.

This program element has been revised into two specialized analytical divisions: (1) External Analysis Division (EAD) - responsible for providing joint external analysis is the Marine Corps' sole representative in the joint modeling arenas. Provides deployed on site professional operations analysis support to Special Purpose MAGTFs in CENTCOM and AFRICOM. (2) Combat Development Analysis Division responsible for executing a select portfolio of studies for senior leadership, Capabilities Based Assessment (CBA) and Marine Corps Enterprise Integration Plan (MCEIP).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Studies & Analysis/MC	4.034	2.348	2.732	0.000	2.732
Articles:	-	-	-	-	-
Description: The Marine Corps Studies System (MCSS), the sole responsibility of the Operations Analysis Directorate (OAD), Combat Development and Integration (CD&I), supports the Commandant's Planning Guidance (CPG) and Deputy Commandant, CD&I's Force Design Plan. Executive Order 13589, Department of Defense (DoD) Directive 8260.05 Support for Strategic Analysis, and DoD Instruction 8260.2 Implementation of Data Collection, Development, and Management for Strategic Analyses, directs analytic teams apply the following analytic principles: Transparency, Consistency, Integration, use of Standardized and Accepted Methods, thorough consideration of Quantitative and Qualitative Factors, and documentation of Assumptions and Constraints. Program provides research and analysis and findings to ensure a greater understanding of issues and alternatives concerning force design, tactics, wargaming, strategies, intelligence, weapon selection and retention, systems' programs, cyber intel, and resource allocation. Efforts selected by the Studies					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt	Project (Number/Name) 0030 / Studies & Analysis/MC				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Requirements Review Board (SRRB) and approved by the DC, Combat Development and Integration (CD&I) focus on current and future USMC mission requirements and the need for comprehensive analyses that meets the Commandant's Strategic Goals, supports and protects forces in theater, and utilizes funds efficiently.							
FY 2021 Plans:							
- Continue: Analysis and studies in the areas of: Joint Capabilities Assessments; Naval Strategic Plan Assessments; equipment capabilities assessments to include aviation and tactical vehicles acquisitions, and studies analyzing threat assessments from changing hostile entities. These studies and analysis efforts require follow-on analysis or longer period of data analyses and metrics preparation to complete.							
- Continued: Synthetic Operations Research Model Phase II (STORM) joint armed forces effort that supports modeling and simulation analyses involving irregular warfare missions and force design plans executed in a future Defense Planning Guidance scenario. These missions include information operations, offensive tactical and operational CYBER operations, foreign internal defense, special direct action arising from intelligence gathered from Human Intelligence (HUMINT) and technical (SIGINT, CYBER) means.							
- Completed: Studies and analysis efforts initiated in FY 2020 in the areas of Fleet Logistics and Composition and Mission Capabilities Integration; Offensive Tactical and Operational CYBER Operations Weapons Systems and Space Based Capabilities; and Naval and Joint Services Strategic Planning studies.							
- Continued: Studies and analysis submitted via the Marine Corps Studies System Call for Studies that support the Commandant's 2020-2025 Vision and Strategy Areas of concentration including: Force Development and Combat Readiness; National Security Environments Threats and Strategic Planning; Intelligence Information and Networks; Capability Integration; Weapons Systems and Space Based Capabilities. Provide focused analyses regarding force realignments, training and equipment support that best meet the tactical needs of the Marine Corps while building a leaner better educated force.							
- Initiated: Studies and analysis requested adhoc by senior level leadership to support combat development and systems acquisition decisions. Core competencies include examination of Aviation, C4ISR, Maneuver, Logistics, and Seabasing capabilities in order to evaluate and identify operational deficiencies, and to explore potential solutions.							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt	Project (Number/Name) 0030 / Studies & Analysis/MC		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO
<ul style="list-style-type: none"> - Initiated: Provide combat analyst assessment teams for national emergencies and contingencies. Conduct baseline analysis to support Mission Capability Packages (MCPs), Investment Strategy, Joint Capability Areas (JCAs), and the Naval Strategic Plan providing assessments for future force development. Provide analysis of tactical operations within the USMC and formulate ways to improve the effectiveness of the forces to win and minimize costs and lives lost. - Initiated: Studies directed by the Commandant Marine Corps (CMC) to invest in the advancement of Big-Data Analytics and the potential for Machine Learning as a means to ensure a cost effective roadmap for implementing progressive advancements for institutional, economic and evolutionary efficiencies. - Initiated: Acquisition of new modeling and simulation tools that support changing and evolving analytical and techniques and allow for efficient collection of metrics. <p>FY 2022 Base Plans:</p> <ul style="list-style-type: none"> - Continue: Studies and analysis submitted via the Marine Corps Studies System Call for Studies that support the Commandant's 2020-2025 Vision and Strategy Areas and provide analytic focus in support of Deputy Commandant Marine Corps (DCMC), Combat Development and Integration (CD&I) priorities. Provide enhanced support and increased capacity to address priorities such as: <ul style="list-style-type: none"> - Force Design efforts for III Marine Expeditionary Forces (MEF) designed to provide stand in force capability to persist, meet and resist adversary weapons systems and facilitate an effective naval campaign. - The relative threats posed by our major adversaries (e.g., Russian resurgence, N. African instability, China's One Belt Road Initiative and PRC capabilities and activities) - Prosecuting global campaigns - Interoperable systems equipment maximizing joint and coalition warfare - Warfighting Concepts and Force Development to include Stand in Force, Expeditionary Advanced Base Operations (EABO) - Unmanned Systems, and Warfighting Investments and Divestments - Space Domain modeling and improvements - Modernization of Directed Energy, Counter Precision Guided Munitions and Ground Based Air Defense - Integrating information operations into the MAGTF construct both organizationally and to maximize effects on the battlefield 					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt		Project (Number/Name) 0030 / Studies & Analysis/MC		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<div>- Leveraging autonomy and artificial intelligence to establish and maintain dominance over existing and emerging threats</div> <div>- Using big data/data science/predictive analysis to gain comparative advantage</div> <div>- Continue: Synthetic Operations Research Model (STORM) joint armed forces effort that supports modeling and simulation analyses involving irregular warfare missions and force design plans executed in a future Defense Planning Guidance scenario.</div> <div>- Complete: Firm, concise statistical data and facts that enable Senior Leadership to make informed decisions in the areas of: Mission Capability Packages, (MCPs); Investment Strategy Aviation; Maneuver; Logistics; Investment Strategy; Joint Capability Assessments (JCAs), and Future Force Development.</div> <div>- Complete: Synthetic Operations Research Model Phase III (STORM) joint services effort.</div> <div>- Initiate: Synthetic Operations Research Model Phase IIII (STORM) that supports analysis involving irregular warfare missions executed in a future Defense Planning Guidance scenario. These missions include information operations, offensive tactical and operational CYBER operations, foreign internal defense, special direct action arising from intelligence gathered from Human Intelligence (HUMINT) and technical (SIGINT, CYBER) means.</div> <div>- Initiate: Analysis and potential solutions for Senior Leadership to support executive and POM decision in the areas:<div>- Space Based Capabilities</div><div>- Marine Corps Enterprise (MCEN) Cyber Operations</div><div>- Modernization of Munitions Requirements</div><div>- Intelligence Satellite Communications</div><div>- Aviation, i.e F-35 and CH-53K</div><div>- Maneuver, Logistics and Seabasing Capabilities</div><div>- Marine Air and Ground Task Force (MAGTF) Capabilities and Readiness Strategies</div></div> <div>FY 2022 OCO Plans:</div> <div>N/A</div> <div>FY 2021 to FY 2022 Increase/Decrease Statement:</div>						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt	Project (Number/Name) 0030 / Studies & Analysis/MC			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
The recently completed Marine Corps Reliance on Space-Based Capabilities study developed a comprehensive examination of all USMC equipment reliant on space-based capabilities, and prototyped an approach for visualizing the risk to mission of operating in a space degraded or denied environment, known as Space Dagger. Increase in funds from FY 2021 to FY 2022 of \$0.384M provides for the initiation of the follow-on study to improve the modeling of USMC reliance on space-based capabilities by expanding Space Dagger.					
Accomplishments/Planned Programs Subtotals	4.034	2.348	2.732	0.000	2.732
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt				Project (Number/Name) 0033 / OT&E Support			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0033: OT&E Support	0.000	14.194	14.906	15.338	-	15.338	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Marine Corps Operational Test and Evaluation Activity (MCOTEA) supports the material acquisition process by managing the Marine Corps Operational Test (OT) programs for Acquisition Categories (ACAT) I through ACAT IV (less OT of manned aircraft) and performs other functions that may be directed by the Commandant of the Marine Corps. The primary purpose of Operational Test and Evaluation (OT&E) is to provide information to the Milestone Decision Authority (MDA) regarding the Operational Effectiveness (OE) and Operational Suitability (OS) of the system addressed at a decision point. MCOTEA must ensure that the Marines in the Operating Forces receive the very best possible equipment and support. MCOTEA must also ensure each system proposed for acquisition is tested adequately, evaluated objectively, and reported independently.

Marine Corps Operational Test and Evaluation Activity (MCOTEA) is the only unit that provides the Marine Corps with required operational test and evaluation (OT&E) capability, ensuring the Marine Corps is compliant with laws and regulations, and ensuring that training and equipment are operationally effective, relevant, and suitable. Additionally, MCOTEA's early involvement, coordination, and oversight in developmental testing and evaluation of new combat and combat support systems ensures that our Marines are the best trained, and have the best equipment, with the lowest test costs for taxpayers. Finally, MCOTEA's support of rapid acquisitions ensures that Marines in the fight are supported with the newest and most advanced equipment and that the Marine Corps is compliant with regulations.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: MCOTEA	14.194	14.906	15.338	0.000	15.338
Articles:	-	-	-	-	-
FY 2021 Plans:					
Continue evaluating, quantifying, and reporting on programs for the operational effectiveness, suitability and survivability of planned acquisitions to meet warfighting capabilities and will be providing Milestone Decision Authority (MDAs) to programs that are inherently governmental and a comprehensive understanding of operational risk associated with ACAT programs.					
FY 2022 Base Plans:					
Continue evaluating, quantifying, and reporting on programs for the operational effectiveness, suitability and survivability of planned acquisitions to meet warfighting capabilities and will be providing Milestone Decision					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt	Project (Number/Name) 0033 / OT&E Support			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Authority (MDAs) to programs that are inherently governmental and a comprehensive understanding of operational risk associated with ACAT programs.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Increase of \$0.432M from FY 2021 to FY 2022 is a result of civilian pay/benefits/awards rate increases/assumptions.					
Accomplishments/Planned Programs Subtotals	14.194	14.906	15.338	0.000	15.338
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt				Project (Number/Name) 2330 / Chem Bio Consequence Mgmt			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2330: Chem Bio Consequence Mgmt	0.000	1.530	1.620	1.645	-	1.645	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Family of Incident Response Systems (FIRS) consists of equipment, systems, and services designed to provide Weapons of Mass Destruction (WMD) incident response forces the capabilities needed to effectively respond to a terrorist attack using Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives (CBRNE). FIRS meets the mission requirements for the detection; mass casualty decontamination; force protection; responder inter-agency interoperability; Command, Control, Communications, Computers & Intelligence (C4I); urban search and rescue; medical and general support requirements needed by these forces to mitigate the effects of a CBRNE terrorist attack. FIRS relies primarily on Commercial Off-The-Shelf/Non-Developmental Items (COTS/NDI) equipment and systems that meet the particular mission requirements of Consequence Management (CM). Nuclear, Biological, and Chemical (NBC) systems are adopted if they meet the CM mission requirements. FIRS Research & Development effort allows the program to keep abreast of emerging technologies in the commercial sector and address operational capability gaps that cannot be met by commercial items.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: FIRS: Reconnaissance Mission Area	0.300	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Title: FIRS: Force Protection Mission Area	1.230	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: N/A					
FY 2022 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt		Project (Number/Name) 2330 / Chem Bio Consequence Mgmt		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A						
FY 2022 OCO Plans: N/A						
Title: FIRS: Family of Incident Response Systems		0.000	1.620	1.645	0.000	1.645
Articles:		-	-	-	-	-
FY 2021 Plans: -Complete durability test of Chemical Biological Incident Response Force's (CBIRF's) Chemical, Biological, Radiological and Nuclear (CBRN) personal protection equipment items, including Class 2 and Class 3 suits. -Initiate communication integration on improved Mobile Chemical Agent Detector (iMCAD). -Initiate Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) training emulator device. -Initiate development Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) analytic, detection, and identification training devices. -Initiate Information Assurance (IA) / Cybersecurity accreditation for Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) / Chemical Biological Incident Response Force (CBIRF) Equipment. -Initiate development of Gas Chromatograph Mass Spectrometry (GCMS) replacement of Guardian. -Complete development of the Chemical Biological Incident Response Force (CBIRF) standoff chemical agent detection.						
FY 2022 Base Plans: -Continue communication integration on improved Mobile Chemical Agent Detector (iMCAD). -Continue Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) training emulator device. -Continue development Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) analytic, detection, and identification training devices. -Continue Information Assurance (IA) / Cybersecurity accreditation for Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) / Chemical Biological Incident Response Force (CBIRF) Equipment. -Continue development of Gas Chromatograph Mass Spectrometry (GCMS) replacement of Guardian.						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement:						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt		Project (Number/Name) 2330 / Chem Bio Consequence Mgmt	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Increase of \$0.025M from FY 2021 to FY 2022 is due to the development of CBIRF/DR SKO Personal Protective Equipment ahead of technical refreshes in FY 2023 - FY 2024 to include Powered Air Purifying Respirators (PAPR), Hydraulic Extraction Kit, and Tech Rescue Kit.					
Accomplishments/Planned Programs Subtotals	1.530	1.620	1.645	0.000	1.645

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/2220: Wpns & Cmbt Vehs under \$5 million	0.540	0.556	0.000	-	0.000	-	-	-	-	-	-
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt				Project (Number/Name) 3009 / Marine Corps Wargaming Capability			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3009: Marine Corps Wargaming Capability	0.000	11.027	15.000	23.518	-	23.518	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Previously executed within Proj 0030 Studies & Analysis/MC

A. Mission Description and Budget Item Justification

The enhanced Wargaming Capability (WGC) facilitates Force Design by utilizing advanced modeling and simulation systems and analytic assessments of current Operation Plans, Concepts of Operations, future operational and functional concepts, and operational and technology-based approaches. These results will refine our Force Design through our campaign of learning and increase research capacity to maintain the USMC as a "force-in-readiness." The WGC program office is unique from other programs in that the program office is responsible for the system of systems within the facility as well as coordinating the unique manpower requirements. The USMC WGC consists of Wargaming tools and systems, a Wargaming Center (MILCON Project P-719), and the necessary personnel supporting the new capability.

WGC will provide an enhanced basis for analytically informed decision support to capability development prioritization and resourcing. The WGC program acquisition strategy takes advantage of 10 U.S.C 2302 Middle Tier of Acquisition (MTA) and was designated a MTA for Rapid Prototyping in May 2019. The overarching strategy consists of three phases: Phase I: Risk Reduction Prototyping (FY 2019 - FY 2020); Phase II: Integrated Prototyping (FY 2020 - FY 2022); Phase III: Follow-on Production (FY 2023 - FY 2025+).

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Wargaming Capability	11.027	15.000	23.518	0.000	23.518
Articles:	-	-	-	-	-
FY 2021 Plans: FY2021 began with three competing vendors completing initial design reviews to establish initial allocated baselines and four months of development towards integrated prototypes. However, the FY2021 plan changed to down-select to a single vendor earlier than originally planned (2QFY2021 vice 3QFY2022) based on performance and affordability. The change also includes a seven-month extension in the Phase II Period of Performance to better align with the MILCON construction schedule for the Wargaming Center (i.e., external dependency). Continue vendor-built prototype effort by focusing on solutions that combine four different capability sets: (1) wargame design and scenario generation; (2) scalable intelligent data services; (3) player interface and visualization; (4) advanced analytic					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt		Project (Number/Name) 3009 / Marine Corps Wargaming Capability		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
tools. During FY2021 there will be agile development with planned incremental testing and quarterly capability demonstrations between PM WGC and the vendor to monitor and evaluate development progress.						
Continue to design and develop Information Technology (IT) and network infrastructure.						
FY 2022 Base Plans: FY2022 plans now include completing vendor Phase II prototype development. Completing development of cybersecurity measures and logistics elements (e.g. sustainability, maintainability, and training) and conducting prototype evaluations. Major milestones for Phase II within FY2022 are: (a) the creation of final allocated baseline based upon performance specification requirements for the system; (b) Test Readiness Review to evaluate the readiness of the prototype to proceed into Developmental Testing; (c) Developmental Testing of vendor's proposed solution. Developmental Testing and cyber evaluation of the vendor-built prototype in FY2022 will lead to a Phase III Follow-on Production contract in 1QFY2023.						
Wargaming Capability efforts include prototyping with an emphasis on identifying and integrating appropriate technologies and directing cyber security support for initiatives to boost information assurance, network configuration, security control validation, and type accreditation across the materiel solution.						
Continue to document the allocated baseline.						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: Increase of \$8.518M from FY2021 to FY2022 will complete Phase II prototyping and the final evaluation of the Phase II prototype. The extended Period of Performance will synchronize with the MILCON construction completion.						
Accomplishments/Planned Programs Subtotals		11.027	15.000	23.518	0.000	23.518

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021	
Appropriation/Budget Activity 1319 / 6				R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt				Project (Number/Name) 3009 / Marine Corps Wargaming Capability			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• PMC/4630: Common Computer Resources-Marine Corps Wargaming Capability	48.094	33.349	83.606	-	83.606	-	-	-	-	-	-
• RDTEN/0605873M/3009: Marine Corps Wargaming Capability - MTA RDTE Funding	11.027	15.000	23.518	-	23.518	-	-	-	-	-	-
Remarks											
RDTE/3009 and PMC/4630 Marine Corps Wargaming Capability reflects funding associated with Middle Tier Acquisition (MTA) rapid prototyping and fielding.											
Marine Corps Wargaming Capability - MTA PMC Funding FY22: 24.676											
Marine Corps Wargaming Capability - MTA RDTE Funding Prev: 8.238 FY20: 11.027 FY21: 15.000 FY22: 23.518											
D. Acquisition Strategy											
The WGC program acquisition strategy takes advantage of 10 U.S.C 2302 Middle Tier of Acquisition (MTA) and was designated a MTA for Rapid Prototyping in May 2019. The overarching strategy consists of three phases: Phase I: Risk Reduction Prototyping (FY 2019 - FY 2020); Phase II: Integrated Prototyping (FY 2020 - FY 2022); Phase III: Follow-on Production (FY 2023 - FY 2025+).											

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605873M I Marine Corps Program Wide Supt				Project (Number/Name) 3783 I Information Environment Strategy, Policy and Governance			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3783: Information Environment Strategy, Policy and Governance	0.000	3.024	3.875	3.809	-	3.809	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Information Environment (IE) is a global, interconnected, complex, continuously changing eco-system that is increasingly connected across our war fighting functions. Given the complexity and the speed of changes in the IE and to address the significant role information now plays in current and future conflicts, a unifying operational and technical strategy must be developed to outpace our adversaries.

Analysis will inform the development and integration of Marine Corps Information Environment Operations (IE Ops) that are guided by the 38th Commandant's Planning Guidance (CPG) and Marine Corps Force Design. Research and analysis efforts support: design and coordinated implementation of an Objective Network to fight on and through a contested environment; design and collaboration on a Naval Tactical Grid and a Joint Tactical Grid; a threat estimate to inform capability development; and analysis to inform the development and fielding of an integrated information capability. These efforts will be accomplished leveraging analytic support from government Labs and Industry to dynamically exploit our National Defense Strategy (NDS) priority operational problems related to the Information Environment through limited user evaluations and functional capability assessments with Marines. In addition, rapid development of capabilities to address problems in the IE Ops will be developed utilizing the Accelerator process which utilizes best commercial practice of design thinking.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Information Environment Strategy	3.024	3.875	3.809	0.000	3.809
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue to conduct innovation activities across the information domain to develop user centered capabilities for the future operating environment. - This program will continue to focus on the Information Warfare capabilities within the Deputy Commandant for Information portfolio. This includes the following capabilities; Information Operations, Electronic Warfare, Tactical Command and Control, and Cyber Operations. - Continue rapid development of capabilities to address problems supporting Operations in the Information Environment, utilizing the Accelerator and incubator processes. The Marine Corps Information Environment Enterprise (MCIEE) Information Modernization team will develop and transition software and hardware solutions to Programs of Record.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605873M / Marine Corps Program Wide Supt		Project (Number/Name) 3783 / Information Environment Strategy, Policy and Governance		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- This funding also supports MCIEE efforts that align to the CMC Force Design 2030.</p> <p>FY 2022 Base Plans:</p> <p>- Continue to conduct innovation activities across the information domain to develop user centered capabilities for the future operating environment.</p> <p>- This program will continue to focus on the Information Warfare capabilities within the Deputy Commandant for Information portfolio. This includes the following capabilities; Information Operations, Electronic Warfare, Tactical Command and Control, and Cyber Operations.</p> <p>- Continue rapid development of capabilities to address problems supporting Operations in the Information Environment, utilizing the Accelerator and incubator processes. The Marine Corps Information Environment Enterprise (MCIEE) Information Modernization team will develop and transition software and hardware solutions to Programs of Record.</p> <p>- This funding also supports MCIEE efforts that align to the CMC Force Design 2030.</p> <p>FY 2022 OCO Plans:</p> <p>N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement:</p> <p>No significant change from FY 2021 to FY 2022.</p>						
Accomplishments/Planned Programs Subtotals		3.024	3.875	3.809	0.000	3.809
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D											
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	38.921	41.091	35.614	-	35.614	-	-	-	-	-	-
0223: Sub Combat System Improvement (ADV)	0.000	0.135	0.128	0.124	-	0.124	-	-	-	-	-	-
0824: Science & Technology Managment	0.000	0.000	24.439	18.445	-	18.445	-	-	-	-	-	-
1447: Surf Combatant Combat System Imp	0.000	0.171	0.111	0.221	-	0.221	-	-	-	-	-	-
3159: Naval Integrated Fire Control-Counter Air SE&I	0.000	0.170	0.110	0.216	-	0.216	-	-	-	-	-	-
3186: Air and Missile Defense Radar	0.000	0.503	0.532	0.529	-	0.529	-	-	-	-	-	-
3216: Tactical Support Center-Integration	0.000	0.025	0.015	0.000	-	0.000	-	-	-	-	-	-
3345: ONR Management Headquarters	0.000	37.917	15.756	16.079	-	16.079	-	-	-	-	-	-

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P384

A. Mission Description and Budget Item Justification

The Management HQ - R&D program funds management headquarter civilian personnel salaries at the Office of Naval Research (ONR). These personnel support the management of the Naval Science and Technology (S&T) programs. This program also funds management headquarter contractor support for the Integrated Warfare Systems (IWS) Program Executive Office.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support		PE 0605898N / Management HQ - R&D			
B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	39.673	41.094	41.559	-	41.559
Current President's Budget	38.921	41.091	35.614	-	35.614
Total Adjustments	-0.752	-0.003	-5.945	-	-5.945
• Congressional General Reductions	-	-0.003			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.752	0.000			
• Rate/Misc Adjustments	0.000	0.000	-5.945	-	-5.945
Change Summary Explanation					
Funding: Funding decrease in FY22 is due to DoN Total Force Manpower restructuring.					
Technical: No significant change.					
Technical: No significant change.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 0223 / Sub Combat System Improvement (ADV)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0223: Sub Combat System Improvement (ADV)	0.000	0.135	0.128	0.124	-	0.124	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides management headquarters contractor support to the Integrated Warfare Systems (IWS) Program Executive Office (PEO). This work supports Navy Acoustic Superiority and Technology Insertion Initiatives through the application of advanced development and testing of sensors and sensor processing systems supporting tactical control systems improvements. This addresses technology challenges to improve tactical control in littoral and open ocean environments for a variety of operational missions.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Management Headquarters Personnel	0.135	0.128	0.124	0.000	0.124
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue APB development, integration, land-based testing, at-sea testing, and establishment of tactical scenarios.					
FY 2022 Base Plans: - Continue APB development, integration, land-based testing, at-sea testing, and establishment of tactical scenarios.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: FY 2021 (\$0.128M) to FY 2022 (\$0.124M) decrease (\$-0.004M) reflects a nominal reduction in scope to APB development efforts.					
Accomplishments/Planned Programs Subtotals	0.135	0.128	0.124	0.000	0.124

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D	Project (Number/Name) 0223 / Sub Combat System Improvement (ADV)
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 0824 / Science & Technology Managment			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0824: Science & Technology Managment	0.000	0.000	24.439	18.445	-	18.445	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds all basic costs of Office of Naval Research Management Headquarters Activity (MHA) non-labor in support of the entire Navy Science & Technology (S&T) program. Through this support, the S&T enterprise pursues the technological advances that enable the Fleet's ability to operate from a position of technological superiority.

Specifically, funding facilitates the execution of the Navy's basic research, applied research, and advanced technology development programs at the nation's universities/colleges, Navy laboratories, Warfare Centers, and private industry.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Science and Technology Management	0.000	24.439	18.445	0.000	18.445
Articles:	-	-	-	-	-
<p>FY 2021 Plans: Provides corporate MHA Non-Labor support in facilitating the purchase of the S&T programs for the Navy to ensure consistent external reporting. All Non-Operational HQ is now Major Headquarters Activity (MHA).</p> <p>FY 2022 Base Plans: Provides corporate MHA Non-Labor support in facilitating the purchase of the S&T programs for the Navy to ensure consistent external reporting.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decrease from FY21 to FY22 due to Department of Navy Total Force Manpower restructuring.</p>					
Accomplishments/Planned Programs Subtotals	0.000	24.439	18.445	0.000	18.445

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D	Project (Number/Name) 0824 / Science & Technology Managment
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 1447 / Surf Combatant Combat System Imp			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
1447: Surf Combatant Combat System Imp	0.000	0.171	0.111	0.221	-	0.221	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 This project provides management headquarters contractor support to the Integrated Warfare System (IWS) Program Executive Office (PEO). This work supports Cruiser and Destroyer AEGIS Combat System (ACS) upgrades and integrates new equipment and systems to pace the threat and capture advances in technology.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Management Headquarter Personnel	0.171	0.111	0.221	0.000	0.221
Articles:	-	-	-	-	-
FY 2021 Plans: Continue to support Cruiser and Destroyer AEGIS Combat System (ACS) upgrades and integrate new equipment and systems to pace the threat and capture advances in technology.					
FY 2022 Base Plans: Continue to support Cruiser and Destroyer AEGIS Combat System (ACS) upgrades and integrate new equipment and systems to pace the threat and capture advances in technology.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: Increase is due to additional support required for AEGIS Capability Package 22-1, which captures additional warfighting improvements.					
Accomplishments/Planned Programs Subtotals	0.171	0.111	0.221	0.000	0.221

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 3159 / Naval Integrated Fire Control-Counter Air SE&I			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3159: Naval Integrated Fire Control-Counter Air SE&I	0.000	0.170	0.110	0.216	-	0.216	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 This project provides management headquarters contractor support to the Integrated Warfare System (IWS) Program Executive Office (PEO). This work supports Naval Integrated Fire Control - Counter Air (NIFC-CA) project. Through this support technological advances are being developed enabling PEO IWS to extend the Naval Theater Air and Missile Defense battlespace out to the maximum kinematic range of our weapons.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Management Headquarter Personnel <div style="text-align: right;">Articles:</div> FY 2021 Plans: Continue to support the Navy's research and development efforts for NIFC-CA's System Engineering, Integration and Test (SEI&T) project. FY 2022 Base Plans: Support the Navy's research and development efforts for NIFC-CA's System Engineering, Integration and Test (SEI&T) project. Assist with Test Events At SEA and Land Based Test events. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Increase is due to additional support required for the additional Test Events at SEA and Land Based Test Events in FY22.	0.170 -	0.110 -	0.216 -	0.000 -	0.216 -
Accomplishments/Planned Programs Subtotals	0.170	0.110	0.216	0.000	0.216

C. Other Program Funding Summary (\$ in Millions)
 N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D	Project (Number/Name) 3159 / Naval Integrated Fire Control-Counter Air SE&I
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 3186 / Air and Missile Defense Radar			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3186: Air and Missile Defense Radar	0.000	0.503	0.532	0.529	-	0.529	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: P384												
A. Mission Description and Budget Item Justification This project provides management headquarters contractor support to the Integrated Warfare System (IWS) Program Executive Office (PEO). Through this support, technological advances are being developed, enabling PEO IWS to deliver "Enterprise" solutions for Naval Warfare Systems that operate seamlessly and effectively within the Fleet and Joint Forces.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: Management Headquarter Personnel <div style="text-align: right;">Articles:</div> FY 2021 Plans: Continue risk reduction testing at ARDEL, including refinement of radar operation functions (calibration, fault detection/fault isolation, environmental adaptation), improving electronic protection capabilities, and continue data collection on ballistic missile defense targets of opportunity. FY 2022 Base Plans: Continue risk reduction testing at ARDEL, including refinement of radar operation functions (calibration, fault detection/fault isolation, environmental adaptation), improving electronic protection capabilities, and continue data collection on ballistic missile defense targets of opportunity. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: Increase due to need for additional support for AMDR development.							0.503	0.532	0.529	0.000	0.529	
Accomplishments/Planned Programs Subtotals							0.503	0.532	0.529	0.000	0.529	

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy									Date: May 2021		
Appropriation/Budget Activity 1319 / 6				R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 3186 / Air and Missile Defense Radar			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDT&E/0604522N: Air and Missile Defense Radar (AMDR) System	36.912	78.319	98.186	-	98.186	-	-	-	-	-	-
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 3216 / Tactical Support Center-Integration			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3216: Tactical Support Center-Integration	0.000	0.025	0.015	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project provides management headquarters contractor support to the Integrated Warfare System (IWS) Program Executive Office (PEO). This supports AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC) fulfillment of Anti-Submarine Warfare (ASW) and Surface Warfare (SUW) coordination functions utilizing data received from multiple sources to assess the threat and assist the Tactical Action Officer (TAO) and Composite Warfare Commander (CWC) in effectively applying available resources to support CVN self-defense. This supports CV-TSC functionality updates being implemented through an evolutionary acquisition approach, providing phased incremental builds that are developed, tested, certified and fielded.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: Management Headquarter Personnel							0.025	0.015	0.000	0.000	0.000	
Articles:							-	-	-	-	-	
FY 2021 Plans:												
- Continue CV-TSC Development/Integration including development of software builds and systems engineering efforts, conduct of incremental requirements, design, and test reviews.												
FY 2022 Base Plans:												
N/A												
FY 2022 OCO Plans:												
N/A												
FY 2021 to FY 2022 Increase/Decrease Statement:												
FY 2021 (\$0.015M) to FY 2022 (\$0.000M) decrease reflects the realignment of all funding to higher priorities within the department.												
Accomplishments/Planned Programs Subtotals							0.025	0.015	0.000	0.000	0.000	
C. Other Program Funding Summary (\$ in Millions)												
N/A												
Remarks												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D	Project (Number/Name) 3216 / Tactical Support Center-Integration
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D				Project (Number/Name) 3345 / ONR Management Headquarters			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3345: ONR Management Headquarters	0.000	37.917	15.756	16.079	-	16.079	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project funds all basic costs of Office of Naval Research Management Headquarters Activity (MHA) salaries in support of the entire Navy Science & Technology (S&T) program. Through this support, the S&T enterprise pursues the technological advances that enable the Fleet's ability to operate from a position of technological superiority.

Specifically, funding facilitates the execution of the Navy's basic research, applied research, and advanced technology development programs at the nation's universities/colleges, Navy laboratories, Warfare Centers, and private industry.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Management Headquarters Personnel	37.917	15.756	16.079	0.000	16.079
Articles:	39	-	-	-	-
Description: N/A					
FY 2021 Plans: Provides corporate MHA personnel salaries to facilitate management of S&T programs for the Navy to ensure consistent external reporting. All Non-Operational HQ is now Major Headquarters Activity (MHA).					
Continue to reduce auditability challenges to meet the mandate.					
FY 2022 Base Plans: Continue to provides corporate MHA personnel salaries to facilitate the purchase of the S&T programs for the Navy to ensure consistent external reporting. All Non-Operational HQ is now Major Headquarters Activity (MHA).					
Continue to reduce auditability challenges to meet the mandate.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0605898N / Management HQ - R&D		Project (Number/Name) 3345 / ONR Management Headquarters				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)				FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
No significant change from FY 2021 to FY 2022								
Accomplishments/Planned Programs Subtotals				37.917	15.756	16.079	0.000	16.079
C. Other Program Funding Summary (\$ in Millions)								
N/A								
Remarks								
D. Acquisition Strategy								
N/A								

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	27.668	33.058	38.958	-	38.958	-	-	-	-	-	-
0798: Allied/Coalition Maritime Environment (ACME)	0.000	1.095	1.194	1.188	-	1.188	-	-	-	-	-	-
2144: Space & Elec Warfare Engineering	0.000	13.976	19.169	24.623	-	24.623	-	-	-	-	-	-
2147: ISR Architecture	0.000	1.476	1.428	0.000	-	0.000	-	-	-	-	-	-
3319: Fleet Experimentation	0.000	8.924	8.928	10.830	-	10.830	-	-	-	-	-	-
3320: TRIDENT Warrior	0.000	2.197	2.339	2.317	-	2.317	-	-	-	-	-	-
A. Mission Description and Budget Item Justification												
Allied/Coalition Maritime Environment (ACME) 0798: This project promotes interoperability with allied and coalition forces by facilitating maritime interoperability in both processes and communication systems, including emerging capabilities, to counter growing high-end asymmetric threats.												
Space & Electronic Warfare (SEW) Engineering 2144: This project is a systems engineering non-acquisition program to develop, test, implement Technical Authority (TA) products, and validate Naval Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Business Information Technology (IT), and Space System architectures to support naval, Joint and Coalition missions across normal, contested, and degraded cyber/operational environments. The objective of this project is carried out by multiple tasks that ensure development and delivery of Naval Information Warfare (IW) capabilities that are well-integrated, interoperable, secure, and resilient to meet validated warfighting requirements.												
The Intelligence, Surveillance, and Reconnaissance (ISR) Architecture 2147: This project is intended to guide system of systems capability development and promote interoperability across Navy ISR programs, as well as interoperability and alignment with Department of Defense (DoD)-wide enterprise initiatives including Joint Information Environment (JIE) and Intelligence Community (IC) Information Technology Environment (ITE).												
Fleet Experimentation 3319: The U.S. Navy's Fleet Experimentation (FLEX) project advances/augments operational and tactical warfighter capabilities through the experimentation of high payoff initiatives, technologies and concepts, Fleet Concepts of Operations (CONOPS), doctrine, and new tactics, techniques and procedures (TTP). The main focus of FLEX between 2018 and 2024 is to operationalize "A Design For Maintaining Maritime Superiority" Blue Line of Effort (LOE) through the execution of Fleet Design materiel/ non-materiel capability employment.												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management				
Trident Warrior Project 3320: The U.S. Navy's Trident Warrior (TW) experimentation campaign enables early delivery of capabilities to the warfighter via Fleet-directed Trident Warrior operational events with an emphasis on United States Fleet Forces/Commander Pacific Fleet (USFF/CPF) directed focus areas.						
Maritime Communications Demonstration Project 3420: Classified Project Maritime Communications Demonstration (MCD) is not a new start. Funding was realigned from project 3319 FLEX in FY18. The Expeditionary SFOC Communications is developing and experimenting innovative concepts designed to validate both materiel and non-materiel methodologies to provide resilient command and control within the maritime domain. Identified previous work done within Office of the Secretary of Defense (OSD) channels, and will leverage lessons learned.						
B. Program Change Summary (\$ in Millions)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget		28.750	37.022	43.675	-	43.675
Current President's Budget		27.668	33.058	38.958	-	38.958
Total Adjustments		-1.082	-3.964	-4.717	-	-4.717
• Congressional General Reductions		-	-0.113			
• Congressional Directed Reductions		-	-3.851			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-1.082	0.000			
• Program Adjustments		0.000	0.000	-3.516	-	-3.516
• Rate/Misc Adjustments		0.000	0.000	-1.201	-	-1.201
Change Summary Explanation						
The FY22 increase is due to the amplified Navy-wide emphasis on the Information Warfare domain as a platform to support future warfighter operations with secure networks.						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management				Project (Number/Name) 0798 / Allied/Coalition Maritime Environment (ACME)			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0798: Allied/Coalition Maritime Environment (ACME)	0.000	1.095	1.194	1.188	-	1.188	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The ACME program advances Information Warfare (IW) (to include Command, Control, Communications, Computers; Intelligence, Surveillance and Reconnaissance (C4ISR); Electronic Warfare (EW); and Cyber Warfare), interoperability with Australia, Canada, New Zealand, United Kingdom, United States (AUSCANNZUKUS), North Atlantic Treaty Organization (NATO), and other Allied and Coalition partners. The program determines maritime operational gaps with our allies, identifies Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) solutions with the potential to fill those gaps, and assesses these solutions and associated concepts of operation in laboratory and at-sea environments. The ACME program includes integration and testing in support of joint and Allied war fighting capabilities, including interoperability testing of IW equipment. Allied and joint interoperability is critical for future maritime operations, especially as the United States Navy (USN) expands Internet Protocol (IP) networking throughout the fleet via Consolidated Afloat Networks and Enterprise Services (CANES), Next Generation Networks (NGEN), Mission Partner Environment/ Future Mission Networking (MPE/FMN), the U.S. Battlefield Information Collection and Exploitation System - eXtended (BICES-X), and with the Joint Information Environment (JIE).

Currently, IP connectivity with AUSCANNZUKUS and other Allied/Coalition forces is limited, requiring extensive backhaul through ashore infrastructure. Higher bandwidth solutions suitable for use over tactical networks require development and assessment for emerging coalition and joint interoperability requirements, such as Maritime Domain Awareness (MDA), Network Operations Without Shore (NOWS), Satellite Communications (SATCOM) Denied, Degraded, Intermittent and Low-bandwidth (DDIL) operations, and to counter Anti-Access Area Denial (A2/AD) threats. Increases in data throughput are required for the effective exchange of rich IW data sets and services via Service Oriented Architectures (SOA) within the limitations of High Frequency (HF), Ultra-High Frequency (UHF), and other portions of the radio frequency spectrum, coupled with appropriate Information Assurance and Computer Network Defense (IA/CND) mechanisms. Development and assessment of potential solutions will integrate improved IP capabilities with the Advanced Digital Network Systems (ADNS) and existing international standards (e.g. Allied Communications Publication 200, NATO Standardization Agreements 5066 and 4691). The continued development and refinement of advanced tactical networking technologies and protocols, to include Low Probability of Intercept (LPI), Low Probability of Detection (LPD), and Anti-Jam (AJ) capabilities as well as Automatic Link Establishment (ALE) standards, will provide for a significant improvement in secure data sharing within, and between, coalition maritime elements.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Advanced Relay Capabilities	1.095	1.194	1.188	0.000	1.188
Articles:	-	-	-	-	-
FY 2021 Plans:					
- Continue to develop and evaluate secure, interoperable technologies and capabilities supporting Denied, Degraded, Intermittent and Low-bandwidth (DDIL) operations including Allied/Coalition Shared Situational					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021				
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management	Project (Number/Name) 0798 / Allied/Coalition Maritime Environment (ACME)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Awareness, cross-domain and data labeling solutions in maritime tactical networking environments, and advanced Information Assurance and Computer Network Defense (IA/CND) solutions (with common and interoperable processes and technologies).</p> <p>- Continue to evaluate technologies for interoperable maritime networking. Solutions will address higher bandwidth, Low Probability of Intercept (LPI)/Low Probability of Detection (LPD)/Anti-Jam (AJ) technologies across the Radio Frequency (RF) and Optical spectrum and include airborne capabilities. Evaluation of electromagnetic spectrum management and visualization technologies, force-level Electronic Warfare/Electromagnetic Maneuver Warfare (EW/EMW) will also enhance interoperable Information Warfare (IW).</p> <p>- Continue to enhance Allied IW interoperability with other joint and maritime multi-national forums, such as the Combined Communications Electronic Board (CCEB), Multinational Maritime Information-system Interoperability Steering Group (M2I2), MPE/FMN, and Joint Information Environment (JIE) forums.</p> <p>- Continue to assess and validate individual technologies, integrated solutions, and associated Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) through experimentation, trials and demonstrations with Australia, Canada, New Zealand, United Kingdom, United States and other Allied/Coalition partners during operational venues, such as the United States Navy (USN) Rim of the Pacific (RIMPAC) or United Kingdom (UK) Joint Warrior exercise series.</p> <p>FY 2022 Base Plans:</p> <p>- Continue to develop and evaluate secure, interoperable technologies and capabilities supporting Denied, Degraded, Intermittent and Low-bandwidth (DDIL) operations including Allied/Coalition Shared Situational Awareness, cross-domain and data labeling solutions in maritime tactical networking environments, and advanced Information Assurance and Computer Network Defense (IA/CND) solutions (with common and interoperable processes and technologies).</p> <p>- Continue to evaluate technologies for interoperable maritime networking. Solutions will address higher bandwidth, Low Probability of Intercept (LPI)/Low Probability of Detection (LPD)/Anti-Jam (AJ) technologies across the Radio Frequency (RF) and Optical spectrum and include airborne capabilities. Evaluation of electromagnetic spectrum management and visualization technologies, force-level Electronic Warfare/Electromagnetic Maneuver Warfare (EW/EMW) will also enhance interoperable Information Warfare (IW).</p> <p>- Continue to enhance Allied IW interoperability with other joint and maritime multi-national forums, such as the Combined Communications Electronic Board (CCEB), Multinational Maritime Information-system Interoperability Steering Group (M2I2), Mission Partner Environment/ Future Mission Networking, and Joint Information Environment (JIE) forums.</p>							

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / <i>Warfare Innovation Management</i>		Project (Number/Name) 0798 / <i>Allied/Coalition Maritime Environment (ACME)</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- Continue to assess and validate individual technologies, integrated solutions, and associated Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) through experimentation, trials and demonstrations with Australia, Canada, New Zealand, United Kingdom, United States and other Allied/Coalition partners during operational venues, such as the United States Navy (USN) Rim of the Pacific (RIMPAC) or United Kingdom (UK) Joint Warrior exercise series.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decrease of \$0.006M between FY21 and FY22 is attributed to the reduction in support for Allied Information Warfare (IW) interoperability exercises with other joint and maritime multi-national forums.</p>						
Accomplishments/Planned Programs Subtotals		1.095	1.194	1.188	0.000	1.188
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management				Project (Number/Name) 2144 / Space & Elec Warfare Engineering			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2144: Space & Elec Warfare Engineering	0.000	13.976	19.169	24.623	-	24.623	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

To support Navy objectives in advancing Information Warfare (IW) capabilities, the Space and Electronic Warfare (SEW) Engineering project provides three main functions:

(1) Perform System of Systems (SoS) Cybersecurity Engineering; develop the architectures, specifications and standards, tools, and processes to support a single integrated Navy plan for cybersecurity. These engineering artifacts provide Navy specific guidance to drive common and consistent implementation of security controls across current and future Navy Programs of Record/projects. This eliminates redundancies and inefficiencies characteristic of previous stove-pipe development efforts in which each system addressed security individually. These efforts enable a standardized approach to move out faster to improve the Navy's cyber resiliency. Provide the cybersecurity vulnerability and functional test capability, which supports cybersecurity test requirements and the Command, Control, Communications, Computers, Intelligence (C4I) components of Naval Information Warfare Systems Command (NAVWARSYSCOM) Information Warfare (IW) Capability Testing Lab (formerly USS SECURE). NAVWAR Cyber Security Testing Capability/Labs is a cyber assessment program within the Navy. This SoS (Afloat, Aloft, C4I & Shore) capability in a test laboratory environment provides a rapidly re-configurable capability that integrates maritime hardware systems into a virtual platform. This platform level SoS provides cybersecurity research, development, test and evaluation, and training, not otherwise possible. This combination of Systems Commands (SYSCOM) laboratories, cyber ranges, and Red Teams simulating Navy platforms in operational maritime environments is critical for effectively evaluating cyber threats against specified mission threads.

(2) Perform System of Systems (SoS) Capability Roadmapping and Engineering; define an integrated Enterprise Architecture to support design, development and delivery of integrated Navy Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Business Information Technology (IT), and Space System capabilities. This architecture reflects current (as-is) and future (target) end states to support technical analyses, program planning, and enterprise-level investment decisions across IW capabilities. Perform mission based system of systems analysis to ensure integration and interoperability, and validate end-to-end warfighting capabilities to quickly address emerging threats. Provides engineering tools and processes to drive rigorous Systems Engineering discipline across the acquisition lifecycle to support rapid development and delivery of secure and interoperable C4ISR, Business IT, and Space Systems capabilities that meet Fleet requirements. Conduct Systems Engineering Technical Reviews (SETRs) to provide independent, objective assessments of technical maturity and compliance with applicable architectures, specifications and standards across IW capabilities. The Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX) provides a means to demonstrate and evaluate the interoperability of United States (US), North Atlantic Treaty Organization (NATO), and coalition information sharing systems.

(3) Navy Additive Manufacturing (AM) technology aligns to CNO priorities to deliver revolutionary capabilities to improve fleet readiness. These enterprise solutions will provide the foundation to (a) enhance warfighter capability through new innovative system designs; (b) increase readiness through low volume production of hard to

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source items; and (c) improve warfighting capacity by enabling production at or near the point of need. Specific efforts include the development of an Enterprise Digital Manufacturing Architecture which addresses design and certification of AM capabilities for both afloat and ashore, development of Cyber Security Risk Management Profiles for devices and applications on operational networks, definition of a secure Technical Data Package to describe components that can be digitally manufactured, and the development of an overarching, enterprise-level Digital Manufacturing Thread (device management, digital rights management, licensing, configuration management, data storage rule/access and application programing interfaces).						
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Cybersecurity Architecture, Specifications and Standards Articles: FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A		6.532 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Cybersecurity Vulnerability & Functional Test Capability Articles: FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A		0.799 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Enterprise Architecture Articles: FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans:		0.642 -	0.000 -	0.000 -	0.000 -	0.000 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A						
Title: SYSCOM Systems Engineering Articles: FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A		1.903 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX) Articles: FY 2021 Plans: N/A FY 2022 Base Plans: N/A FY 2022 OCO Plans: N/A		1.008 -	0.000 -	0.000 -	0.000 -	0.000 -
Title: Additive Manufacturing (AM) Articles: FY 2021 Plans: - Complete development of Risk Management Framework (RMF) Profiles for the various components and interfaces required to network AM hardware and software assets. - Continue utilizing the Additive Manufacturing Test-Bed to develop specifications, standards, and architecture to drive interoperability across the Navy Enterprise Digital Thread for Additive Manufacturing. - Continue to define a Defense-in-Depth Functional Implementation Architecture Network Transformation (DFIANT) architecture for additive manufacturing. - Complete the Additive Manufacturing data strategy. - Define the Digital Manufacturing Strategy for integration into logistics Digital transformation plan.		3.092 -	4.318 -	2.296 -	0.000 -	2.296 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management		Project (Number/Name) 2144 / Space & Elec Warfare Engineering		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- Create Off-Shore deployable Data Repository and digital architecture for Afloat Units.</p> <p>FY 2022 Base Plans:</p> <p>- Continue utilizing the Additive Manufacturing Test-Bed to develop specifications, standards, and architecture to drive interoperability across the Navy Enterprise Digital Thread for Additive Manufacturing.</p> <p>- Define a Defense-in-Depth Functional Implementation Architecture Network Transformation (DFIANT) architecture for additive manufacturing.</p> <p>- Continue to define the Digital Manufacturing Strategy for integration into logistics Digital transformation plan.</p> <p>FY 2022 OCO Plans:</p> <p>N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement:</p> <p>Decrease of \$2.022M between FY21 to FY22 can be attributed to the reduced requirement to support the Off-Shore deployable Data Repository and digital architecture for Afloat Units.</p>						
<p>Title: System of Systems (SoS) Cybersecurity Engineering</p> <p>Articles:</p> <p>FY 2021 Plans:</p> <p>- Continue to evaluate emerging threats, advances in technology, updates to National Institute of Standards and Technology (NIST) and DoD guidance to inform the need for new technical artifacts that provide cybersecurity guidance to Navy Programs of Record (PoR) and projects.</p> <p>- Continue to develop the architectures, specifications, and standards that provide the technical foundation of the single, integrated Navy plan for cybersecurity, and drive implementation of Information Technology (IT) and Cybersecurity (CS)/Technology Authority architectures, specifications and standards across programs and projects. Support program reviews and milestones via risk assessments that articulate systems' ability to support operational missions in various cyber conditions and refining the Cybersecurity Figure of Merit (CFOM) to assess Information Warfare programs and projects effectiveness in meeting cybersecurity requirements.</p> <p>- Develop detailed design artifacts for PoRs to ensure integration between Navy Cyber Situational Awareness (NCSA) tools and the Defensive Cyber Operations enclave to enable command and control of Navy networks under all cyber conditions.</p>		0.000 -	9.093 -	12.146 -	0.000 -	12.146 -

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management	Project (Number/Name) 2144 / Space & Elec Warfare Engineering		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base
-Continue to utilize lab assets for cross-SYSCOM NAVWAR Cybersecurity Testing Capability serial test events.					
FY 2022 Base Plans:					
- Continue to evaluate emerging threats, advances in technology, updates to National Institute of Standards and Technology (NIST) and DoD guidance, NAVWAR Cybersecurity Technical Authority (CS TA) cyber risk assessments, and results of Naval Information Warfare Systems Command (NAVWARSYSCOM) Information Warfare (IW) Capability Testing Lab (formerly USS SECURE) cyber test activities to inform the need for new or updated technical artifacts that provide standardized cybersecurity guidance to Navy Programs of Record (PoR) and projects.					
- Continue to develop the IT and Cybersecurity Technical Authority architectures, specifications, and standards that provide the technical foundation of the single, integrated Navy plan for cybersecurity, and drive common implementations across programs and projects. Support program reviews and milestones via risk assessments that articulate systems' ability to support operational missions in various cyber conditions and expanding the Cybersecurity Figure of Merit (CFOM) assessments applied to Information Warfare programs and projects to Navy-wide assessments of effectiveness in meeting cybersecurity requirements.					
- Continue to develop detailed design artifacts for PoRs to ensure integration between Navy Cyber Situational Awareness (NCSA) tools and the Defensive Cyber Operations enclave to enable command and control of Navy networks under all cyber conditions, supporting Navy-wide modernization such as Naval Digital Platform Transformation and Integrated Navy Operations Command and Control System (INOCCS).					
- Continue to utilize NAVWAR lab assets for cross-SYSCOM NAVWAR Cybersecurity Testing Capability serial test events and support Navy-wide Live, Virtual, and Constructive (LVC) IW capability tests.					
FY 2022 OCO Plans:					
N/A					
FY 2021 to FY 2022 Increase/Decrease Statement:					
Increase of \$3.053M between FY21 to FY22 is attributed to the increased support to Navy-wide modernization such as Naval Digital Platform Transformation and Integrated Navy Operations Command and Control System (INOCCS).					
Title: System of Systems (SoS) Capability Roadmapping and Engineering			0.000	5.758	10.181
Articles:			-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>FY 2021 Plans:</p> <p>- Continue supporting Navy digital engineering requirements by continuing to grow the capabilities of the Architecture Data Repository to effectively share data across the Naval Information Warfare Systems Command (NAVWARSYSCOM) enterprise and with other Naval Systems Commands (SYSCOMs). Provide the infrastructure critical to implementing an integrated Model Based Systems Engineering environment, and provide configuration management.</p> <p>- Continue development of Model Based System Engineering (MBSE) capabilities, processes and tools to support development and delivery of recommendations to address capability gaps, overlaps, interoperability issues and cybersecurity risks across complex Navy System of Systems (SoS) to ensure effective end-to-end mission performance.</p> <p>- Continue to refine the Integration and Interoperability (I&I) Integrated Capability Framework (ICF) to support SoS analyses of how well systems operate together across the Naval enterprise to deliver validated warfighting capabilities.</p> <p>- Perform Systems Engineering Technical Reviews (SETRs) across Command and Control (C2); Intelligence, Surveillance, & Reconnaissance/Information Operations (ISR/IO); Space Systems, Business IT; and Communications & Networks to ensure compliance with statutory and regulatory directives, as well as implementing applicable Information Technology (IT) and Cybersecurity (CS) Technology Authority (TA) architectures, specifications, standards, policies, processes and profiles.</p> <p>- Continue to conduct Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance(C4ISR) certifications and technical reviews of formal acquisition and engineering documentation through design and testing analysis, ensuring interoperability with platform, force level, and joint/ allied/coalition forces.</p> <p>- Resume Competency Development Model (CDM) development by defining roles and appropriate Knowledge Skills and Abilities (KSAs) for the Naval Information Warfare Systems Command (NAVWARSYSCOM) Engineering Competency required to meet evolving mission requirements.</p>						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021		
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2020	FY 2021	FY 2022 Base
<p>- Continue to promote improved interoperability and information sharing through coalition engagement, technology, demonstrations, and assessments leading to improvements of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems within the Navy and in conjunction with Joint Services and Coalition efforts. Partners include the MultiNational Maritime Informational Technology and Interoperability Board (M2I2), Pacific Command (PACOM) and Southern Command (SOUTHCOM), and North Atlantic Treaty Organization (NATO). Partner feedback is for the planning and execution of Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX) and execution of the Mission Partner Environment (MPE) in the appropriate venues.</p> <p>FY 2022 Base Plans:</p> <p>- Continue supporting Navy digital engineering transformation by continuing to expand the capabilities of the Architecture Data Repository, cross-SYSCOM schema and integrated dictionary to more effectively share data across the Naval Systems Commands (SYSCOMs). Provide the infrastructure critical to implementing a Navy Integrated Modeling Environment, and provide requirements traceability and configuration management.</p> <p>- Continue development of Model Based System Engineering (MBSE) capabilities, processes and tools to support development and delivery of recommendations to address capability gaps, overlaps, interoperability issues and cybersecurity risks across complex Navy System of Systems (SoS) to ensure effective end-to-end mission performance.</p> <p>- Continue to leverage digital engineering and automation to support complex mission-based SoS analyses of how well systems operate together across the Naval enterprise to deliver validated warfighting capabilities to inform key investment processes such as the Naval Capability Integrated Process for Information Warfare (NCIP-IW).</p> <p>- Perform Systems Engineering Technical Reviews (SETRs) across Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) and Space Systems; Digital Enterprise Services; Manpower, Logistics, and Business Solutions programs to ensure compliance with statutory and regulatory directives, as well as implementing applicable Information Technology (IT) and Cybersecurity (CS) Technology Authority (TA) architectures, specifications, standards, policies, processes and profiles. Leverage digital engineering and artificial intelligence advances to automate SETR.</p>					
					FY 2022 OCO
					FY 2022 Total

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management		Project (Number/Name) 2144 / Space & Elec Warfare Engineering		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- Continue to conduct Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) certifications and technical reviews of formal acquisition and engineering documentation through design and testing analysis, ensuring interoperability with platform, force level, and joint/allied/coalition forces.</p> <p>- Continue Competency Development Model (CDM) development by defining roles and appropriate Knowledge Skills and Abilities (KSAs) for the Naval Information Warfare Systems Command (NAVWARSYSCOM) Engineering Competency required to shape the workforce to meet evolving mission requirements.</p> <p>- Continue to promote improved interoperability and information sharing through coalition engagement, technology, demonstrations, and assessments leading to improvements of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems within the Navy and in conjunction with Joint Services and Coalition efforts. Partners include the Multi-National Maritime Informational Technology and Interoperability Board (M2I2), Pacific Command (PACOM) and Southern Command (SOUTHCOM), and North Atlantic Treaty Organization (NATO). Partner feedback ensures effective planning and execution of Coalition Warrior Interoperability eXploration, eXperimentation, eXamination, eXercise (CWIX) and execution of the Mission Partner Environment (MPE) in the appropriate venues to support IW capability objectives.</p> <p>- Begin the Naval Capability-Based Assessment Integrated Process for Information Warfare (NCIP-IW) effort. This effort involves the NAVWAR C4I Mission Effects and Requirements Analysis (C4IMERA) cross-functional team tasking to align with NCIP From The Sea (NCIP-FTS) and NCIP From The Air (NCIP-FTA) teams, and coordination with PEO C4I and Fleet stakeholders.</p> <p>-Begin tasking on the Navy Tactical Grid (NTG) effort, which supports developing a framework and plan for the IW domain to help develop the Navy's maritime design 2.0 (NTG).</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: The \$4.423M increase from FY21 to FY22 is attributed to the increasing requirement to digitize the Navy and implement continuous development, integration, test and delivery of Information Warfare; commencing the Naval</p>						

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<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Capability-Based Assessment Integrated Process for Information Warfare (NCIP-IW); and commencing the NTG effort.					
Accomplishments/Planned Programs Subtotals	13.976	19.169	24.623	0.000	24.623

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Manag ement				Project (Number/Name) 2147 / ISR Architecture			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
2147: ISR Architecture	0.000	1.476	1.428	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Integrated architectures provide a technical framework for assessing capability gaps and performance of individual systems and System of Systems (SoS) and their ability to effectively provide the desired effects to support warfighting missions. They also serve as a means to influence and drive Programs of Record (PoR) toward a common, more efficient state that promotes interoperability and security.

The Naval Intelligence, Surveillance, and Reconnaissance (ISR) Reference Architecture project is intended to guide system of systems capability development and promote interoperability across Navy ISR programs, as well as interoperability and alignment with Department of Defense (DoD)-wide enterprise initiatives including Joint Information Environment and Intelligence Community Information Technology Environment and Space & Naval Warfare Systems Command-wide Enterprise Architecture policies. This effort to develop integrated ISR architectures will instill systems engineering discipline and standardization across the Navy ISR Enterprise. These efforts will reduce Information Technology/ISR infrastructure complexity and variances, making it easier to manage, operate and defend our ISR capabilities, and help inform investment decisions across the Navy's ISR enterprise to support Assured Command and Control, Battlespace Awareness and Integrated Fires.

This effort will encompass the documentation and analysis of current ISR enterprise architectures to inform and guide requirements for target architecture development and performance requirements to support full use and incorporation of ISR capabilities to advance Navy operations afloat. The associated studies will produce both technical and non-technical implementation guidance across the Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities spectrum.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Intelligence, Surveillance, and Reconnaissance (ISR) Architecture	1.476	1.428	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2021 Plans: - Complete analyzing the current Intelligence, Surveillance, and Reconnaissance (ISR) capabilities of afloat, ashore, joint, and national systems within mission contexts to demonstrate gaps and overlaps in Information Warfare capabilities and document in engineering artifacts and architectures. Perform trade space analysis and develop and quantify solutions using technical and operational performance parameters. - Complete building on the documentation and analysis of the enterprise ISR capabilities to support System of Systems engineering assessments to identify integration and interoperability gaps, trades, and solutions to support investment decision-making across the ISR portfolio.					

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Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / <i>Warfare Innovation Management</i>		Project (Number/Name) 2147 / <i>ISR Architecture</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<ul style="list-style-type: none"> - Complete integrating the National, Joint, and Naval ISR architectures within mission contexts to identify functional capacities, materiel integration and interoperability gaps and overlaps, as well as any policy and doctrine impacts. - Complete performing V&V to ensure ISR architecture and analytic products accurately capture system performance specifications. - Complete capturing all architectural data in the NAVWAR analysis tool suite to support rigorous engineering assessments and architecture excursions against solution alternatives. - Complete ensuring alignment and interoperability between ISR Architectures and Joint Information Enterprise, Intelligence Community Information Technology Enterprise and NAVWAR Enterprise Architectures. <p>FY 2022 Base Plans: N/A</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decrease of \$1.428M between FY21 and FY22 is attributed to a Naval ISR Reference Architecture vertical reduction, eliminating funding beginning in FY22.</p>						
Accomplishments/Planned Programs Subtotals		1.476	1.428	0.000	0.000	0.000
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management				Project (Number/Name) 3319 / Fleet Experimentation			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3319: Fleet Experimentation	0.000	8.924	8.928	10.830	-	10.830	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Chief of Naval Operations (CNO) Navigation Plan, signed in January 2021, focuses on integrated, all-domain Naval power and clearly states that we will align our exercises, experiments, and education to understand requirements to defeat the adversary. Additionally, the Fleet will continue to experiment through fleet battle problems, wargames, and exercises - like Large Scale Exercise 2021 - to refine concepts and capabilities. Fleet Experimentation (FLEX) funds are used to support Fleet Design implementation which includes foundational warfighting concepts like Distributed Maritime Operations (DMO). FLEX experimentation is a proven and efficient approach to improving warfighting effectiveness. As directed in the annual Fleet Commanders' FLEX Guidance message, the FLEX program addresses warfighting gaps identified in IPCLs generated by Warfighting Development Centers (WDC), the Fleet Integrated Priorities Letter (IPL), Navy Urgent Operational Needs Statements (UONS), Fleet Design, DMO, and other concepts. FLEX funding resources experimentation venues - creating operationally representative environments to examine solutions with the potential to solve warfighting problems and mature foundational warfighting concepts. Through experimentation, new capabilities and solutions for identified gaps are tested, refined, and used to support acquisition strategies and inform procurement decisions. Additionally, through experimentation activities such as workshops, wargames, live at-sea events, and experimentation campaigns, the FLEX program examines potential materiel and non-materiel solutions that will enhance the Fleet's ability to execute assigned missions in the near term while building a foundation for capabilities that will be required in the mid to far term. FLEX events and campaigns require all facets of experimentation design, planning, systems engineering and integration, execution management, data collection, analysis, assessment, and the delivery of tangible products. While Navy-centric, FLEX efforts are coordinated with the Marine Corps, and include joint, coalition, Science and Technology (S&T), academia, and industry partners.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Fleet Experimentation (FLEX)	8.924	8.928	10.830	0.000	10.830
Articles:	-	-	-	-	-
Description: Fleet Experimentation (FLEX) is a collaborative effort with multiple partners designed to address prioritized capability gaps to produce Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTmLPF-P) actions. FLEX deliverables are focused on operational and tactical warfighting capabilities in the near term (within the Future Years Defense Plan) and prioritized by annual Fleet (Commander, U.S. Fleet Forces Command (CUSFFC), Commander, Pacific Fleet (CPF), and Commander, Naval Forces Europe - Africa (CNE-AF)) Commanders' guidance to enhance warfighting capability across all Joint Warfighting Functions, supporting IPCLs and KOPs. FLEX is an enabler for Fleet Design, Fleet Warfighting Training Construct (FWTC) and Distributed Maritime Operations (DMO). FLEX supports workshops, wargames, and operational experiments ashore and at-sea. FLEX provides venues and the expertise to					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021			
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management		Project (Number/Name) 3319 / Fleet Experimentation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
identify DOTmLPF-P gaps for sponsored programs/technologies prior to delivery to the Fleet, with the goal of delivering capability wholeness to the warfighter. FLEX is vital to continuously improving critical naval warfighting capabilities						
FY 2021 Plans: The following FLEX efforts built upon prior year efforts using various types of experimentation venues which included workshops, wargames, and operational shore-based and at-sea events:						
COUNTERMEASURE (MCM) CONCEPT TO TECHNOLOGY TABLE TOP EXERCISE (TTX) (.186) Experiment details can be provided via SIPR						
NAVAL TACTICAL GRID LIMITED OBJECTIVE EXPERIMENT (LOE) 1 (.186) Experiment details can be provided via SIPR						
STOIC LOE (.186) Experiment details can be provided via SIPR						
Fleet Experimentation (FLEX) during DAWN BLITZ 21 (.186) Experiment details can be provided via SIPR						
UNDERSEA INFRASTRUCTURE TARGETING (UIT) TARGETING (TTX) (.186) Experiment details can be provided via SIPR						
Fleet Experimentation (FLEX) in CITADEL SHIELD/SOLID CURTAIN 2021 (.323) Experiment details can be provided via SIPR						
Fleet Experimentation (FLEX) in FLEET BATTLE PROBLEM (FBP) 21-4 (.840) Experiment details can be provided via SIPR						
NAVAL TACTICAL GRID LOE 2 (.840) Experiment details can be provided via SIPR						
ELEKTRA TECHNOLOGY INNOVATION GAME (TIG) WORKSHOP (.186)						

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Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management		Project (Number/Name) 3319 / Fleet Experimentation				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)				FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Experiment details can be provided via SIPR								
COUNTER SMALL UNMANNED AERIAL VEHICLES (C-sUAV) AT-SEA LOE (.580) Experiment details can be provided via SIPR								
Fleet Experimentation (FLEX) in FORMIDABLE SHIELD 2021 (.510) Experiment details can be provided via SIPR								
Fleet Experimentation (FLEX) in BALTIC OPERATIONS (BALTOPS) 2021 (1.200) Experiment details can be provided via SIPR								
HYDROGEN GENERATION LOE (.500) Experiment details can be provided via SIPR								
Fleet Experimentation (FLEX) in LARGE SCALE EXERCISE (LSE) 2021 (.311) Experiment details can be provided via SIPR								
KINETIC COUNTER UNMANNED SYSTEMS (C-UxS) LOE (.574) Experiment details can be provided via SIPR								
UNMANNED INTEGRATED BATTLE PROBLEM 21 (1.850) Experiment details can be provided via SIPR								
FY 2022 Base Plans: FY 2022 Base Plans: Specific plans for FY22 FLEX efforts are still under development and will be included in Department of Navy (DoN) Budget Estimate Submission (BES) RDOCS in late July/early August 2021. FY22 FLEX efforts will address priority Fleet warfighting gaps identified in the FY22 Commanders' FLEX Guidance message. FY22 FLEX efforts will continue to focus on materiel and non-materiel solutions using appropriate experimentation venues including workshops, wargames, and operational shore-based and at-sea experiments. Alignment with IPCLs, KOPs, and the U.S. Navy Fleet Design Campaign Plan will drive experimentation efforts under the following FLEX Campaign focus areas:								

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / <i>Warfare Innovation Management</i>		Project (Number/Name) 3319 / <i>Fleet Experimentation</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Focus area experiment details can be provided via SIPR						
PERSISTENT TARGETING AND LONG RANGE MARITIME FIRES Focus area experiment details can be provided via SIPR						
COUNTER-INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE Focus area experiment details can be provided via SIPR						
FY 2022 OCO Plans: N/A						
FY 2021 to FY 2022 Increase/Decrease Statement: FY22 increase of \$1.902M will fund three (3) stand-alone at sea experiments and experimentation in two (2) Fleet Battle Problems. Fleet Battle Problems provide a realistic, high-end maritime combat environment, and are an important tool to develop DMO capabilities. At sea experimentation is critical to the overall success of the Fleet Experimentation (FLEX) program because at-sea events provides the only operational experimentation environment to assess experimentation initiatives in order to rapidly deploy/transition DOTmLPF-P recommendations into new TTP, accelerate emerging technologies, develop Fleet Concepts of Operations (CONOPS) and to explore and evaluate innovative concepts.						
Accomplishments/Planned Programs Subtotals		8.924	8.928	10.830	0.000	10.830
C. Other Program Funding Summary (\$ in Millions) N/A						
Remarks						
D. Acquisition Strategy N/A						

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management				Project (Number/Name) 3320 / TRIDENT Warrior			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3320: TRIDENT Warrior	0.000	2.197	2.339	2.317	-	2.317	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
U.S. Navy's Trident Warrior (TW) experiment campaign enables early delivery of Information Warfare (IW) capabilities to the warfighter via Fleet-directed TW operational events. Integrates stand-alone systems and efforts to achieve substantially enhanced capability, demonstrates/tests these capabilities in both laboratory and operational environments, and evaluates their effectiveness. Develops supporting concepts and Concept of Operations to improve warfighting effectiveness. Coordinates IW efforts with other Service/Joint/Department of Defense/National efforts to ensure Joint/Interagency/ Allied/Coalition applicability and interoperability.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	
Title: Trident Warrior							2.197	2.339	2.317	0.000	2.317	
Articles:							-	-	-	-	-	
FY 2021 Plans:												
- Evaluate Trident Warrior 2020 (TW20) executed experiments and recommend next steps to all stakeholders.												
- Promote broad participation in TW by researching advanced technology solution candidates, in conjunction with other services, and academic research in order to fill Information Warfare technology gaps.												
- In accordance with standardized procedures, lead TW participant efforts with the following: specific goal identification; risk identification; experiment plans (to include data requirements and collection); and required installation and security certifications, accreditations, and approvals.												
- Provide independent experts and Subject Matter Expertise to ensure compliance with experiment plans, lead analysis effort, and deliver unbiased assessments and results to government sponsors to support the program's engineering recommendations.												
- Plan and execute Trident Warrior 2021 (TW21) experiments to accelerate the transition of IW capability to the Fleet.												
- Begin Trident Warrior 2022 (TW22) planning, taking into consideration identified Naval Capability Gaps.												
FY 2022 Base Plans:												
- Evaluate Trident Warrior 2021 (TW21) executed experiments and recommend next steps to all stakeholders.												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021		
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0606355N / Warfare Innovation Management		Project (Number/Name) 3320 / TRIDENT Warrior		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>- Promote broad participation in TW by researching advanced technology solution candidates, in conjunction with other services, and academic research in order to fill Information Warfare technology gaps.</p> <p>- In accordance with standardized procedures, lead TW participant efforts with the following: specific goal identification; risk identification; experiment plans (to include data requirements and collection); and required installation and security certifications, accreditations, and approvals.</p> <p>- Provide independent experts and Subject Matter Expertise to ensure compliance with experiment plans, lead analysis effort, and deliver unbiased assessments and results to government sponsors to support the program's engineering recommendations.</p> <p>- Plan and execute Trident Warrior 2022 (TW22) experiments to accelerate the transition of IW capability to the Fleet.</p> <p>- Begin Trident Warrior 2023 (TW23) planning, taking into consideration identified Naval Capability Gaps.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decrease of \$0.022M between FY21 and FY22 is attributed to reduction in Subject Matter Expertise (SME) support for core ship services during the experimentation period.</p>						
Accomplishments/Planned Programs Subtotals		2.197	2.339	2.317	0.000	2.317
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
N/A						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0305327N / <i>Insider Threat</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	2.592	2.293	2.581	-	2.581	-	-	-	-	-	-
3442: <i>Insider Threat</i>	0.000	2.592	2.293	2.581	-	2.581	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Executive Order 13587 and the National Insider Threat Policy mandate all United States Government departments and agencies to implement insider threat programs that monitor user activity on all classified networks and provide an insider threat analytical and response capability. The Counter Insider Threat Capability (CITC) is the Department of the Navy's implementation of this requirement. CITC's mission is to deter, detect, and respond to the threat from witting and unwitting insiders. The Platform for Risk Evaluation and Engagement to Neutralize Threat (PREVENT) is the materiel solution required to support the CITC mission, and it will consist of two parts: (1) User Activity Monitoring (UAM), which will monitor user activity on Navy networks, and (2) an Integrated Tool Suite (ITS), which will provide the Information Technology platform for the analytic and response capabilities. The PREVENT system will provide the technology required by the Department of the Navy Insider Threat Analytic Hub to comply with the National mandates and to protect Navy data, equipment, and personnel from insider threats. RDT&E,N funding is required to develop, integrate, and perform testing and evaluation of this capability.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	2.645	2.310	2.676	-	2.676
Current President's Budget	2.592	2.293	2.581	-	2.581
Total Adjustments	-0.053	-0.017	-0.095	-	-0.095
• Congressional General Reductions	-	-0.017			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.053	0.000			
• Program Adjustments	0.000	0.000	-0.087	-	-0.087
• Rate/Misc Adjustments	0.000	0.000	-0.008	-	-0.008

Change Summary Explanation

The FY 2022 funding request was reduced by \$0.087 million to account for the availability of prior year execution balances.

The FY21 to FY22 increase of \$0.288M is due to the testing and evaluation of Integrated Tool Suite (ITS) on JWICS, continued expansion of UAM capability to SIPRNet excepted networks, initiation of testing of long-term UAM capability, and research and development of UAM capability on NIPRNet.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0305327N / <i>Insider Threat</i>				Project (Number/Name) 3442 / <i>Insider Threat</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3442: <i>Insider Threat</i>	0.000	2.592	2.293	2.581	-	2.581	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Executive Order 13587 and the National Insider Threat Policy mandate all United States Government departments and agencies to implement insider threat programs that monitor user activity on all classified networks and provide an insider threat analytical and response capability. The Counter Insider Threat Capability (CITC) is the Department of the Navy's implementation of this requirement. CITC's mission is to deter, detect, and respond to the threat from witting and unwitting insiders. The Platform for Risk Evaluation and Engagement to Neutralize Threat (PREVENT) is the materiel solution required to support the CITC mission, and it will consist of two parts: (1) User Activity Monitoring (UAM), which will monitor user activity on Navy networks, and (2) an Integrated Tool Suite (ITS), which will provide the Information Technology platform for the analytic and response capabilities. The PREVENT system will provide the technology required by the Department of the Navy Insider Threat Analytic Hub to comply with the National mandates and to protect Navy data, equipment, and personnel from insider threats. RDT&E,N funding is required to develop, integrate, and perform testing and evaluation of this capability.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Counter Insider Threat Capability (CITC)	2.592	2.293	2.581	0.000	2.581
Articles:	-	-	-	-	-
FY 2021 Plans: <ul style="list-style-type: none"> - Initiate development and integration of interim solution for ITS. - Complete UAM tool integration into the software baselines of SIPRNet including NMCI and ONE-Net. - Initiate testing and evaluation of UAM on SIPRNet excepted networks and continue integration efforts on to SIPRNet afloat networks (CANES). - Continue evaluation of alternate technologies for future increments of UAM and ITS capability including proof of concept for Defense Information Systems Agency (DISA) Big Data Platform (BDP). - Perform integration of additional data feeds to the ITS. - Complete assessment and authorization of JWICS and SIPRNet cloud infrastructure for UAM capability. 					
FY 2022 Base Plans: <ul style="list-style-type: none"> - Perform testing and evaluation of ITS long-term solution on to JWICS including integration of at least 4 data sources and integration of complex analytics to identify insider threat risk indicators. - Research and development of centralized repository of ITS ingested data that will store structured and unstructured data for the long-term materiel solution. - Perform research and development of cross domain solution for ITS data ingestion between SIPRNet, JWICS, and NIPRNet for future expansion to NIPRNet. 					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy			Date: May 2021
Appropriation/Budget Activity 1319 / 6	R-1 Program Element (Number/Name) PE 0305327N / <i>Insider Threat</i>	Project (Number/Name) 3442 / <i>Insider Threat</i>	

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<ul style="list-style-type: none"> - Continue development efforts to expand the UAM SIPRNet excepted networks across multiple networks. - Initiate testing and development of long-term UAM capability on JWICS and SIPRNet. - Investigate commercial cloud environments and UAM capabilities for future increments of PREVENT capability on Non-classified Internet Protocol Router System (NIPRNet) including alternative technologies and existing solutions. <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: FY22 increase is due to testing and evaluation of Integrated Tool Suite (ITS) on JWICS, continued expansion of UAM capability to SIPRNet excepted networks, initiation of testing of long-term UAM capability, and research and development of UAM capability on NIPRNet.</p>					
Accomplishments/Planned Programs Subtotals	2.592	2.293	2.581	0.000	2.581

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/3415: <i>Info Systems Security Program (ISSP)</i>	166.540	157.551	146.879	-	146.879	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

CITC is employing a flexible acquisition strategy based on the IT Box model to incrementally deliver capability that is responsive to rapidly evolving requirements, priorities, and technology. Requirements for each increment of capability are scoped by validated Capability Drop requirements documents. The initial increment of capability, defined by Capability Drop 1 (CD-1), is designed to achieve Initial Operational Capability (IOC) in FY21 by rapidly fielding existing Commercial Off the Shelf (COTS) tools using Section 804 Middle Tier Acquisition (MTA) authority. The future Program of Record (POR) will build toward Full Operational Capability (FOC) requirements by incrementally expanding UAM coverage and integrating additional data feeds and analytic capabilities in the ITS, as specified in future Capability Drops.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy Date: May 2021

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0902498N / Management HQ - Departmental Spt Acts
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	1.456	1.536	1.747	-	1.747	-	-	-	-	-	-
0831: OPTEVFOR Support	0.000	1.456	1.536	1.747	-	1.747	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element (PE) provides Commander, Operational Test and Evaluation Force (COMOPTEVFOR) general support funding and operating costs for Management Headquarter Activity (MHA) functions that support COMOPTEVFOR compliance with Secretary of Defense (SECDEF) and Secretary of the Navy (SECNAV) directives to conduct independent operational test and evaluation as described in PE 0605865N Operational Test & Evaluation Capability.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	1.460	1.536	1.566	-	1.566
Current President's Budget	1.456	1.536	1.747	-	1.747
Total Adjustments	-0.004	0.000	0.181	-	0.181
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.004	0.000			
• Program Adjustments	0.000	0.000	0.174	-	0.174
• Rate/Misc Adjustments	0.000	0.000	0.007	-	0.007

Change Summary Explanation

FY22 increase reflects realignment of 5 military billets to 4 civilian positions. Unique mission and scope requires long-term continuity. Billets being converted are from existing organization structure that have proven a requirement change in manpower resource type. MIL tour lengths, lack of KSAs, and manning gaps have eroded commands knowledge base in critical support areas. This adjustment will mitigate further degradation and enhance COMPOTEVFORs mission capability.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0902498N / Management HQ - Departmental Spt Acts				Project (Number/Name) 0831 / OPTEVFOR Support			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0831: OPTEVFOR Support	0.000	1.456	1.536	1.747	-	1.747	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This program element (PE) provides Commander, Operational Test and Evaluation Force (COMOPTEVFOR) general support funding and operating costs for Management Headquarter Activity (MHA) functions that support COMOPTEVFOR compliance with Secretary of Defense (SECDEF) and Secretary of the Navy (SECNAV) directives during the conduct of independent operational testing and evaluation as described in PE 0605865N Operational Test & Evaluation Capability.												
Beginning in Fiscal Year 2018, MHA labor and operating costs in support of 14 Full Time Equivalents (FTEs) has been realigned from 0605865N Operational Test and Evaluation Capability into this newly established program element 0902498N Management Headquarters (Departmental Support Accounts) as a result of SECDEF and SECNAV direction to identify all MHA costs separately.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: OPTEVFOR Support								1.456	1.536	1.747	0.000	1.747
Articles:								-	-	-	-	-
Description: Beginning in Fiscal Year 2018, MHA labor and operating costs in support of 14 FTE has been realigned from 0605865N Operational Test and Evaluation Capability into this program element 0902498N Management Headquarters (Departmental Support Accounts) to identify all MHA costs separately.												
FY 2021 Plans:												
This project will provide for the basic costs of the COMOPTEVFOR headquarters activities. Specifically, it will pay for salaries and support costs of civilian personnel who support COMOPTEVFOR compliance with directives during the conduct of independent operational testing and evaluation to determine the operational effectiveness, suitability, and cyber survivability of new and improved systems.												
FY 2022 Base Plans:												
This project will provide for the basic costs of the COMOPTEVFOR headquarters activities. Specifically, it will pay for salaries and support costs of civilian personnel who support COMOPTEVFOR compliance with directives during the conduct of independent operational testing and evaluation to determine the operational effectiveness, suitability, and cyber survivability of new and improved systems.												
FY 2022 OCO Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy				Date: May 2021	
Appropriation/Budget Activity 1319 / 6		R-1 Program Element (Number/Name) PE 0902498N / <i>Management HQ - Departmental Spt Acts</i>		Project (Number/Name) 0831 / <i>OPTEVFOR Support</i>	

<u>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</u>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Increase reflects conversion of 5 military billets to 4 civilian billets.					
Accomplishments/Planned Programs Subtotals	1.456	1.536	1.747	0.000	1.747

<u>C. Other Program Funding Summary (\$ in Millions)</u>
N/A
<u>Remarks</u>
<u>D. Acquisition Strategy</u>
N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
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Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0909999N / Cancelled Account Adjustments
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	0.644	0.000	0.000	-	0.000	-	-	-	-	-	-
0000: <i>UNDIST</i>	0.000	0.644	0.000	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Funding is to reimburse the Department of the Treasury for cancelled account liabilities.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.644	0.000	0.000	-	0.000
Total Adjustments	0.644	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.645	0.000			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	-0.001	0.000	0.000	-	0.000

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy										Date: May 2021		
Appropriation/Budget Activity 1319 / 6					R-1 Program Element (Number/Name) PE 0909999N / <i>Cancelled Account Adjustments</i>				Project (Number/Name) 0000 / <i>UNDIST</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
0000: <i>UNDIST</i>	0.000	0.644	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
Funding is to reimburse the Department of the Treasury for cancelled account liabilities.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Cancelled Account Adjustment	0.644	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Funding is to reimburse the Department of the Treasury for cancelled account liabilities.					
FY 2021 Plans: N/A					
FY 2022 Base Plans: N/A					
FY 2022 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.644	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
N/A